National Climatic Data Center

DATA DOCUMENTATION

FOR

DATSAV3 SURFACE

TD-9956

April 20, 1999

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

1. **Data Set ID:**

9956

2. **Data Set Name:**

DATSAV3 SURFACE, GLOBAL SURFACE HOURLY DATA

3. **Data Set Aliases:**

DATSAV3

4. **Access Method and Sort for Archived Data:**

Surface Observation files consist of observational datasets. Observational databases will be stored in ASCII files. Data item definitions for items transmitted are provided at the end of this preface, providing definition of data items, position number for mandatory data items, field lengths for variable data items, minimum/maximum values of transmitted data, and values for missing data items.

Data Sequence - Data will be sequenced using the following data item order:

1. FIXED-WEATHER-STATION identifier
2. GEOPHYSICAL-POINT-OBSERVATION date
3. GEOPHYSICAL-POINT-OBSERVATION time
4. GEOPHYSICAL-POINT-OBSERVATION latitude coordinate
5. GEOPHYSICAL-POINT-OBSERVATION longitude coordinate
6. GEOPHYSICAL-POINT-OBSERVATION type surface report code
7. GEOPHYSICAL-REPORT-TYPE code

Record Structure - Each record is of variable length and is comprised of a control and mandatory data section and may also contain additional, remarks and reject data sections.

Maximum record size: 2,838 characters

Maximum block length: 8,192 characters

Control Data Section - The beginning of each record provides information about the report including date, time, and station location information. Data items will use positions identified in the applicable data item definition. The control data section is fixed length and is 54 characters long.

Mandatory Data Section - The mandatory data section contains meteorological information on the basic elements such as winds, visibility, and temperature. These are the most commonly reported parameters and are available most of the time. The mandatory data section is fixed length and is 45 characters long.

Additional Data Section - Variable data is provided after the mandatory data. This additional data contains information of significance and/or which are received with a high degree of frequency. Identifiers are used to note when data is present in the record. If all data items in a group are missing, the entire group is not reported. If no groups are reported the section will be omitted. The additional data section is variable in length with a minimum of 0 characters and a maximum of 637 (634 characters plus a 3 character section identifier) characters.

Note: Specific information (where applicable) pertaining to each variable group of data elements is provided in the data item definition

Remarks Data Items - The non-decodable (remarks) data items are provided if they exist. Data items will vary in length and are identified in the applicable data item definition. The remarks section has a maximum length of 515 (512 characters plus a 3 character section identifier) characters.

Element Quality Data Section - The element quality data section contains information on data that has been determined bad or suspect during quality control procedures. This section is variable in length and contains 16 characters for each erroneous or suspect parameter. The section has a minimum length of 0 characters and a maximum length of 1587 (1584 plus a 3 character section identifier) characters.

Missing Values - Missing values for any non-signed item is filled (i.e., 999). Missing values for any signed item is positive filled (i.e., +99999).

Longitude and Latitude Coordinates - Longitudes will be reported with negative values representing longitudes west of 0 degrees, and latitudes will be negative south of the equator. Although, the data field allows for values to a thousandth of a degree the values are only computed to the hundredth of a degree with a 0 entered in the thousandth position.

5. **Access Method and Sort for Supplied Data:** See #4 above.

6. **Element Names and Definitions:**

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Control Data Section

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POS: 1-4

TOTAL-VARIABLE-CHARACTERS (assume this includes remarks add data, remarks etc.)
The number of characters in the variable data section.
DOM: A general domain comprised of the characters in the ASCII character set.
MIN: 0000 MAX: 9999

POS: 5-10

FIXED-WEATHER-STATION identifier
The identifier that represents a FIXED-WEATHER-STATION.
MIN: 000000 MAX: 999999
DOM: A general domain comprised of the numeric characters (0-9).
COMMENT: This field includes all surface reporting stations, including ships, buoys, etc.

POS: 11-18

GEOPHYSICAL-POINT-OBSERVATION date
The date of a GEOPHYSICAL-POINT-OBSERVATION.
MIN: 00000101 MAX: 99991231
DOM: A general domain comprised of integer values 0-9 in the format YYYYMMDD.
YYYY can be any positive integer value; MM is restricted to values 01-12; and DD is restricted to values 01-31.

POS: 19-22

GEOPHYSICAL-POINT-OBSERVATION time
The time of a GEOPHYSICAL-POINT-OBSERVATION based on
Coordinated Universal Time Code (UTC).
MIN: 0000 MAX: 2359
DOM: A general domain comprised of integer values 0-9 in the format HHMM.
HH is restricted to values 00-23; MM is restricted to values 00-59.

POS: 23-28

GEOPHYSICAL-POINT-OBSERVATION latitude coordinate
The latitude coordinate of a GEOPHYSICAL-POINT-OBSERVATION where southern hemisphere is negative.
MIN: -90000 MAX: +90000
UNITS: Degrees
SCALING FACTOR: 1000
DOM: A general domain comprised of the numeric characters (0-9), a plus sign (+), and a minus sign (-).
+99999 = Missing

POS: 29-35

GEOPHYSICAL-POINT-OBSERVATION longitude coordinate
The longitude coordinate of a GEOPHYSICAL-POINT-OBSERVATION where values west from 000000 to 179999 are signed negative.
MIN: -179999 MAX: +180000 UNITS: Degrees
SCALING FACTOR: 1000
DOM: A general domain comprised of the numeric characters (0-9), a plus sign (+), and a minus sign (-).
+999999 = Missing

POS: 36-40

GEOPHYSICAL-REPORT-TYPE code
The code that denotes the type of geophysical surface observation.
DOM: A specific domain comprised of the characters in the ASCII character set.
FM-12 = SYNOP Report of surface observation form a fixed land station
FM-13 = SHIP Report of surface observation from a sea station
FM-14 = SYNOP MOBIL Report of surface observation from a mobile land station
FM-15 = METAR Aviation routine weather report
FM-16 = SPECI Aviation selected special weather report
FM-18 = BUOY Report of a buoy observation
SAO = Airways report (includes record specials)

SAOSP = Airways special report (excluding record specials)
AERO = Aerological report
AUTO = Report from an automatic station
SY-AE = Synoptic and aero merged report
SY-SA = Synoptic and airways merged report
SY-MT = Synoptic and METAR merged report
SY-AU = Synoptic and auto merged report
SA-AU = Airways and auto merged report
S-S-A = Synoptic, airways, and auto merged report
BOGUS = Bogus report
SMARS = Supplementary airways station report

POS: 41-45
GEOPHYSICAL-POINT-OBSERVATION elevation dimension
The elevation of a GEOPHYSICAL-POINT-OBSERVATION relative to Mean Sea Level (MSL).
MIN: -0400 MAX: +8850 UNITS: Meters
SCALING FACTOR: 1
DOM: A general domain comprised of the numeric characters (0-9), a minus sign (-), and a plus sign (+).
+9999 = Missing

POS: 46-50
FIXED-WEATHER-STATION call letter identifier
The identifier that represents the call letters assigned to a FIXED-WEATHER-STATION.
DOM: A general domain comprised of the characters in the ASCII character set.
99999 = Missing.

POS: 51-54
METEOROLOGICAL-POINT-OBSERVATION quality control process name
The name of the quality control process applied to a weather observation.
DOM: A general domain comprised of the ASCII character set.

POS: 55-57
WIND-OBSERVATION direction angle
The angle, measured in a clockwise direction, between true north and the direction from which the wind is blowing.
MIN: 001 MAX: 360 UNITS: Angular Degrees
SCALING FACTOR: 1
DOM: A general domain comprised of the numeric characters (0-9).
999 = Missing

POS: 58-58
WIND-OBSERVATION direction quality code
The code that denotes a quality status of a reported WIND-OBSERVATION direction angle.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = No check
1 = Good
2 = Suspect
3 = Erroneous
9 = Missiing

POS: 59-59
WIND-OBSERVATION type code
The code that denotes the character of the WIND-OBSERVATION.
DOM: A specific domain comprised of the characters in the ASCII character set.
C: Calm
N: Normal
Q: Squall
V: Variable
9 = Missing

POS: 60-63
WIND-OBSERVATION speed rate
The rate of horizontal travel of air past a fixed point.
MIN: 0000 MAX: 0900 UNITS: meters per second
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).
9999 = missing.

POS: 64-64
WIND-OBSERVATION speed quality code
The code that denotes a quality status of a reported WIND-OBSERVATION speed rate.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = No check
1 = Good
2 = Suspect
3 = Erroneous
9 = Missing

POS: 65-69
SKY-CONDITION-OBSERVATION ceiling height dimension
The height above ground level (AGL) of the lowest cloud or obscuring phenomena layer aloft with 5/8 or more summation total sky cover, which may be predominantly opaque, or the vertical visibility into a surface-based obstruction.
MIN: 00000 MAX: 21000 UNITS: Meters
SCALING FACTOR: 1
DOM: A general domain comprised of the numeric characters (0-9).
99999 = missing.

POS: 70-70
SKY-CONDTION-OBSERVATION ceiling quality code
The code that denotes a quality status of a reported ceiling height dimension.

DOM: A specific domain comprised of the characters in the ASCII character set.
0 = No check
1 = Good
2 = Suspect
3 = Erroneous
9 = Missiing

POS: 71-71
SKY-CONDITION-OBSERVATION ceiling determination code
The code that denotes the method used to determine the ceiling.
DOM: A specific domain comprised of the characters in the ASCII character set.
A: Aircraft
B: Balloon
C: Statistically derived
E: Estimated
M: Measured
R: Radar
W: Obscured
9: Missing

POS: 72-72
SKY-CONDITION-OBSERVATION CAVOK code
The code that represents whether the 'Ceiling And Visibility Okay' (CAVOK) condition has been reported.
DOM: A specific domain comprised of the characters in the ASCII character set.
N: No
Y: Yes

POS: 73-78
VISIBILITY-OBSERVATION distance dimension
The horizontal distance at which an object can be seen and identified.
MIN: 000000 MAX: 160000 UNITS: Meters
DOM: A general domain comprised of the numeric characters (0-9).
Missing = 999999
NOTE: Values greater than 1600 are entered as 1600

POS: 79-79
VISIBILITY-OBSERVATION distance quality code
The code that denotes a quality status of a reported distance of a visibility observation.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = No check
1 = Good
2 = Suspect
3 = Erroneous
9 = Missing

POS: 80-80
VISIBILITY-OBSERVATION variability code
The code that denotes whether or not the reported visibility is variable.
DOM: A specific domain comprised of the characters in the ASCII character set.
N: Not variable
V: Variable

POS: 81-81
VISIBILITY-OBSERVATION quality variability code
The code that denotes a quality status of a reported VISIBILITY-OBSERVATION variability code.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = No check
1 = Good
2 = Suspect
3 = Erroneous
9 = Missing

POS: 82-86
AIR-TEMPERATURE-OBSERVATION air temperature

The temperature of the air.
MIN: -0932 MAX: +0618 UNITS: Degrees Celsius
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9), a plus sign (+), and a minus sign (-).
+9999 = missing.

POS: 87-87
AIR-TEMPERATURE-OBSERVATION air temperature quality code
The code that denotes a quality status of an AIR-TEMPERATURE-OBSERVATION.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = No check
1 = Good
2 = Suspect
3 = Erroneous
9 = Missing

POS: 88-92
AIR-TEMPERATURE-OBSERVATION dew point temperature
The temperature to which a given parcel of air must be cooled at constant pressure and water vapor content in order for saturation to occur.
MIN: -0982 MAX: +0368 UNITS: Degrees Celsius
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9), a plus sign (+), and a minus sign (-).
+9999 = missing.

POS: 93-93
AIR-TEMPERATURE-OBSERVATION dew point quality code
The code that denotes a quality status of the reported dew point temperature.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = No check
1 = Good
2 = Suspect
3 = Erroneous
9 = Missing

POS: 94-98
ATMOSPHERIC-PRESSURE-OBSERVATION sea level pressure rate
The air pressure relative to Mean Sea Level (MSL).
MIN: 08600 MAX: 10900 UNITS: Hectopascals
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).
99999 = Missing.

POS: 99-99
ATMOSPHERIC-PRESSURE-OBSERVATION sea level pressure quality code
The code that denotes a quality status of the sea level pressure of an ATMOSPHERIC-PRESSURE-OBSERVATION.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = No check
1 = Good
2 = Suspect
3 = Erroneous
9 = Missing

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Additional Data Section

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FLD LEN: 3
GEOPHYSICAL-POINT-OBSERVATION additional data identifier
The identifier that denotes the beginning of the additional data section.
DOM: A specific domain comprised of the ASCII character set.
ADD Additional Data Section

FLD LEN: 3
LIQUID-PRECIPITATION occurrence identifier
The identifier that represents an episode of LIQUID-PRECIPITATION.
DOM: A specific domain comprised of the characters in the ASCII character set.
AA1 - AA4 An indicator of up to 4 repeating fields of the following items:
LIQUID-PRECIPITATION period quantity
LIQUID-PRECIPITATION depth dimension
LIQUID-PRECIPITATION trace code

FLD LEN: 2
LIQUID-PRECIPITATION period quantity
The quantity of time over which the LIQUID-PRECIPITATION was measured.
MIN: 00 MAX: 48 UNITS: Hours
SCALING FACTOR: 1
DOM: A specific domain comprised of the characters in the ASCII character set
99 = missing.

FLD LEN: 4
LIQUID-PRECIPITATION depth dimension
The depth of LIQUID-PRECIPITATION that is measured at the time of an observation.
MIN: 0000 MAX: 9998 UNITS: millimeters
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).
9999 = missing.

FLD LEN: 1
LIQUID-PRECIPITATION condition code
The code that denotes whether a LIQUID-PRECIPITATION depth dimension was a trace value.
DOM: A specific domain comprised of the characters in the ASCII character set.
1: Measurement impossible or inaccurate
2: Trace
9: Missing

FLD LEN: 3
PRECIPITATION-OBSERVATION-HISTORY identifier
The identifier that indicates the occurrence of precipitation history information.
DOM: A specific domatin comprised ofthe characters in the ASCII character set.
AC1 An indicator of the following items:
PRECIPITATION-OBSERVATION-HISTORY duration code
PRECIPITATION-OBSERVATION-HISTORY characteristic code

FLD LEN: 1
PRECIPITATION-OBSERVATION-HISTORY duration code
The code that denotes the duration of precipitation.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = Lasted less than 1 hour
1 = Lasted 1 - 3 hours
2 = Lasted 3 - 6 hours
3 = Lasted more than 6 hours
9 = missing

FLD LEN: 1
PRECIPITATION-OBSERVATION-HISTORY characteristic code
The code that denotes whether precipitation is continuous or intermittent.
DOM: A specific domain comprised of the characters in the ASCII character set.
C = Continuous

I = Intermittent
9 = missing

FLD LEN: 3
PRECIPITATION-BOGUS-OBSERVATION identifier
The identifier that represents a PRECIPITATION-BOGUS-OBSERVATION.
DOM: A specific domain comprised of the characters in the ASCII character set.
AG1 An indicator of the occurrence of the following items:
PRECIPITATION-OBSERVATION discrepancy code
PRECIPITATION-OBSERVATION estimated water equivalency dimension

FLD LEN: 1
PRECIPITATION-BOGUS-OBSERVATION discrepancy code
The code that denotes the type of discrepancy between a PRECIPITATION-OBSERVATION and other related observations at the same location.
DOM: A specific domain comprised of the characters in the ASCII character set.
0: Reported amount of precipitation and reported weather agree
1: Precipitation missing or not reported and none inferred by weather
2: Precipitation missing, but precipitation inferred by weather
3: Precipitation reported, but none inferred by weather
4: Zero precipitation reported, but precipitation inferred by weather
5: Zero precipitation reported, no precipitation inferred and precipitation not occurring at the reporting station
9: Missing

FLD LEN: 3
PRECIPITATION-BOGUS-OBSERVATION estimated water equivalency dimension
The estimated depth of precipitation in water equivalency for a 3-hour synoptic period.
MIN: 000 MAX: 998 UNITS: millimeters
SCALING FACTOR: 1
DOM: A general domain comprised of the numeric characters (0-9).
999 = Missing.

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FLD LEN: 3
SNOW-DEPTH identifier
The identifier that denotes the start of a SNOW-DEPTH data section.
DOM: A specific domain comprised of the characters in the ASCII character set.
AJ1 An indicator of the occurrence of the following items:
SNOW-DEPTH dimension
SNOW-DEPTH condition code
SNOW-DEPTH equivalent water depth dimension
SNOW-DEPTH equivalent water condition code

FLD LEN: 4
SNOW-DEPTH dimension
The depth of snow and ice on the ground.
MIN: 0000 MAX: 1200 UNITS: centimeters
SCALING FACTOR: 1
DOM: A general domain comprised of the numeric characters (0-9).
9999 = missing.

FLD LEN: 1
SNOW-DEPTH condition code
The code that denotes specific conditions associated with the measurement of snow in a PRECIPITATION-OBSERVATION.
DOM: A specific domain comprised of the characters in the ASCII character set.
1: Measurement impossible or inaccurate
2: Snow cover not continuous
3: Trace
9: Missing

FLD LEN: 6
SNOW-DEPTH equivalent water depth dimension
The depth of the liquid content of solid precipitation that has accumulated on the ground.

MIN: 000000 MAX: 120000 UNITS: millimeters
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).
999999 = missing.

FLD LEN: 1
SNOW-DEPTH equivalent water condition code
The code that denotes specific conditions associated with the measurement of the SNOW-DEPTH.
DOM: A specific domain comprised of the characters in the ASCII character set.
1: Measurement impossible or inaccurate
2: Trace
9: Missing

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FLD LEN: 3
HAIL identifier
The identifier that denotes the start of a HAIL data section.
DOM: A specific domain comprised of the characters in the ASCII character set.
HL1 An indicator of the occurrence of the following item:
Hail dimension

FLD LEN: 3
HAIL size
The diameter of the largest hailstone observed.
MIN: 000 MAX: 200 UNITS: Centimeters
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).

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FLD LEN: 3
SNOW-ACCUMULATION occurrence identifier
The identifer that represents an episode of SNOW-ACCUMULATION.
DOM: A specific domain comprised of the characters in the ASCII character set.
AL1 - AL4 An indicator of up to 4 repeating fields of the following items:
SNOW-ACCUMULATION six hour depth dimension
SNOW-ACCUMULATION condition code
SNOW-ACCUMULATION period quantity

FLD LEN: 2
SNOW-ACCUMULATION period quantity
The quantity of time over which the SNOW-ACCUMULATION occurred.
MIN: 00 MAX: 72 UNITS: Hours
SCALING FACTOR: 1
DOM: A general domain comprised of the characters in the ASCII character set.
99 = missing.

FLD LEN: 3
SNOW-ACCUMULATION depth dimension
The depth of a SNOW-ACCUMULATION.
MIN: 000 MAX: 500 UNITS: centimeters
SCALING FACTOR: 1
DOM: A general domain comprised of the numeric characters (0-9).
999 = Missing.

FLD LEN: 1
SNOW-ACCUMULATION condition code
The code that denotes specific conditions associated with the measurement of the depth of a SNOW-ACCUMULATION.
DOM: A specific domain comprised of the characters in the ASCII character set.
1: Measurement impossible or inaccurate
2: Snow cover not continuous
3: Trace
9: Missing

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FLD LEN: 3

PRESENT-WEATHER-OBSERVATION manual occurrence identifier
The identifier that signifies the reporting of present weather.
DOM: A specific domain comprised of the ASCII characters.
MW1 = first weather reported
MW2 = second weather reported
MW3 = third weather reported
MW4 = fourth weather reported
MW5 = fifth weather reported
MW6 = sixth weather reported
MW7 = seventh weather reported
An indicator of up to 7 repeating fields of the following items:
PRESENT-WEATHER-OBSERVATION manual atmospheric condition code.
PRESENT-WEATHER-OBSERVATION quality manual atmospheric condition code

FLD LEN: 2

PRESENT-WEATHER-OBSERVATION manual atmospheric condition code
The code that denotes a specific type of weather observed manually.
DOM: A specific domain comprised of the characters in the ASCII character set.

00-49 No precipitation at the station at the time of observation

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00-19 No precipitation, fog, ice fog (except for 11 and 12), duststorm, sandstorm, drifting or blowing snow at the station at the time of observation or, except for 09 and 17, during the preceding hour.

00: Cloud development not observed or not observable
01: Clouds generally dissolving or becoming less developed
02: State of sky on the whole unchanged
03: Clouds generally forming or developing
04: Visibility reduced by smoke, e.g. veldt or forest fires, industrial smoke or volcanic ashes
05: Haze
06: Widespread dust in suspension in the air, not raised by wind at or near the station at the time of observation
07: Dust or sand raised by wind at or near the station at the time of observation, but no well-developed dust whirl(s) or sand whirl(s), and no duststorm or sandstorm seen or, in the case of ships, blowing spray at the station
08: Well developed dust whirl(s) or sand whirl(s) seen at or near the station during the preceding hour or at the time of observation, but no duststorm or sandstorm
09: Duststorm or sandstorm within sight at the time of observation, or at the station during the preceding hour
10: Mist
11: Patches of shallow fog or ice fog at the station, whether on land or sea, not deeper than about 2 meters on land or 10 meters at sea
12: More or less continuous shallow fog or ice fog at the station, whether on land or sea, not deeper than about 2 meters on land or 10 meters at sea
13: Lightning visible, no thunder heard
14: Precipitation within sight, not reaching the ground or the surface of the sea
15: Precipitation within sight, reaching the ground or the surface of the sea, but distant, i.e., estimated to be more than 5 km from the station
16: Precipitation within sight, reaching the ground or the surface of the sea, near to, but not at the station
17: Thunderstorm, but no precipitation at the time of observation
18: Squalls at or within sight of the station during the preceding hour or at the time of observation
19: Funnel cloud(s) (Tornado cloud or waterspout) at or within sight of the station during the preceding hour or at the time of observation
20-29 Precipitation, fog, ice fog or thunderstorm at the station during the preceding hour, but not at the time of observation.
20: Drizzle (not freezing) or snow grains not falling as shower(s)
21: Rain (not freezing) not falling as shower(s)
22: Snow not falling as shower(s)
23: Rain and snow or ice pellets not falling as shower(s)
24: Freezing drizzle or freezing rain not falling as shower(s)
25: Shower(s) of rain

26: Shower(s) of snow or of rain and snow
27: Shower(s) of hail (Hail, small hail, snow pellets), or rain and hail
28: Fog or ice fog
29: Thunderstorm (with or without precipitation)
30: Slight or moderate duststorm or sandstorm has decreased during the preceding hour
31: Slight or moderate duststorm or sandstorm no appreciable change during the preceding hour
32: Slight or moderate duststorm or sandstorm has begun or has increased during the preceding hour
33: Severe duststorm or sandstorm has decreased during the preceding hour
34: Severe duststorm or sandstorm no appreciable change during the preceding hour
35: Severe duststorm or sandstorm has begun or has increased during the preceding hour
36: Slight or moderate drifting snow generally low (below eye level)
37: Heavy drifting snow generally low (below eye level)
38: Slight or moderate blowing snow generally high (above eye level)
39: Heavy blowing snow generally high (above eye level)

40-49 Fog or ice fog at the time of observation

40: Fog or ice fog at a distance at the time of observation, but not at the station during the preceding hour, the fog or ice fog extending to a level above that of the observer
41: Fog or ice fog in patches
42: Fog or ice fog, sky visible, has become thinner during the preceding hour
43: Fog or ice fog, sky invisible, has become thinner during the preceding hour
44: Fog or ice fog, sky visible, no appreciable change during the preceding hour
45: Fog or ice fog, sky invisible, no appreciable change during the preceding hour
46: Fog or ice fog, sky invisible, has begun or has become thicker during the preceding hour
47: Fog or ice fog, sky invisible, has begun or has become thicker during the preceding hour
48: Fog, depositing rime, sky visible
49: Fog, depositing rime, sky invisible

50-99 · Precipitation at the station at the time of observation

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50-59 Drizzle

50: Drizzle, not freezing, intermittent, slight at time of observation
51: Drizzle, not freezing, continuous, slight at time of observation
52: Drizzle, not freezing, intermittent, moderate at time of observation
53: Drizzle, not freezing, continuous, moderate at time of observation
54: Drizzle, not freezing, intermittent, heavy (dense) at time of observation
55: Drizzle, not freezing, continuous, heavy (dense) at time of observation
56: Drizzle, freezing, slight
57: Drizzle, freezing, moderate or heavy (dense)
58: Drizzle and rain, slight
59: Drizzle and rain, moderate or heavy
60-69: Rain
60: Rain, not freezing, intermittent, slight at time of observation
61: Rain, not freezing, continuous, slight at time of observation
62: Rain, not freezing, intermittent, moderate at time of observation
63: Rain, not freezing, continuous, moderate at time of observation
64: Rain, not freezing, intermittent, heavy at time of observation
65: Rain, not freezing, continuous, heavy at time of observation
66: Rain, freezing, slight
67: Rain, freezing, moderate or heavy
68: Rain or drizzle and snow, slight
69: Rain or drizzle and snow, moderate or heavy

70-79 Solid precipitation not in showers

70: Intermittent fall of snowflakes, slight at time of observation
71: Continuous fall of snowflakes, slight at time of observation
72: Intermittent fall of snowflakes, moderate at time of observation
73: Continuous fall of snowflakes, moderate at time of observation
74: Intermittent fall of snowflakes, heavy at time of observation
75: Continuous fall of snowflakes, heavy at time of observation
76: Diamond dust (with or without fog)
77: Snow grains (with or without fog)
78: Isolated star-like snow crystals (with or without fog)

79: Ice pellets

80-99 Showery precipitation, or precipitation with current or recent thunderstorm

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80: Rain shower(s), slight
81: Rain shower(s), moderate or heavy
82: Rain shower(s), violent
83: Shower(s) of rain and snow mixed, slight
84: Shower(s) of rain and snow mixed, moderate or heavy
85: Show shower(s), slight
86: Snow shower(s), moderate or heavy
87: Shower(s) of snow pellets or small hail, with or without rain or rain and snow mixed, slight
88: Shower(s) of snow pellets or small hail, with or without rain or rain and snow mixed, moderate or heavy
89: Shower(s) of hail (hail, small hail, snow pellets) , with or without rain or rain and snow mixed, not associated with thunder, slight
90: Shower(s) of hail (hail, small hail, snow pellets), with or without rain or rain and snow mixed, not associated with thunder, moderate or heavy
91: Slight rain at time of observation, thunderstorm during the preceding hour but not at time of observation
92: Moderate or heavy rain at time of observation, thunderstorm during the preceding hour but not at time of observation
93: Slight snow, or rain and snow mixed or hail (Hail, small hail, snow pellets), at time of observation, thunderstorm during the preceding hour but not at time of observation
94: Moderate or heavy snow, or rain and snow mixed or hail(Hail, small hail, snow pellets) at time of observation, thunderstorm during the preceding hour but not at time of observation
95: Thunderstorm, slight or moderate, without hail (Hail, small hail, snow pellets), but with rain and/or snow at time of observation, thunderstorm at time of observation
96: Thunderstorm, slight or moderate, with hail (hail, small hail, snow pellets) at time of observation, thunderstorm at time of observation
97: Thunderstorm, heavy, without hail (Hail, small hail, snow pellets), but with rain and/or snow at time of observation, thunderstorm at time of observation
98: Thunderstorm combined with duststorm or sandstorm at time of observation, thunderstorm at time of observation
99: Thunderstorm, heavy, with hail (Hail, small hail, snow pellets) at time of observation, thunderstorm at time of observation

FLD LEN: 1

PRESENT-WEATHER-OBSERVATION quality manual atmospheric condition code
The code that denotes a quality status of a reported present weather observation from a manual station.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = No check
1 = Good
2 = Suspect
3 = Erroneous
9 = Missing

****

FLD LEN: 3

PRESENT-WEATHER-OBSERVATION automated occurrence identifier
The identifier that signifies the reporting of present weather.
DOM: A specific domain comprised of the ASCII characters.
AW1 First automated weather report
PRESENT-WEATHER-OBSERVATION automated atmospheric condition code
PRESENT-WEATHER-OBSERVATION quality automated atmospheric condition code

FLD LEN: 2

PRESENT-WEATHER-OBSERVATION automated atmospheric condition code
The code that denotes a specific type of weather reported by an automated device.
DOM: A specific domain comprised of the characters in the ASCII character set.
00: No significant weather observed
01: Clouds generally dissolving or becoming less developed
02: State of sky on the whole unchanged during the past hour
03: Clouds generally forming or developing during the past hour

04: Haze, smoke, or dust in suspension in the air, visibility equal to or greater than 1km
05: Smoke
10: Mist
11: Diamond dust
12: Distant lightning
18: Squalls

(Code figures 20-26 are used to report precipitation, fog, or thunderstorm at the station during the preceding hour, but not at the time of observation.)

20: Fog
21: Precipitation
22: Drizzle (not freezing) or snow grains
23: Rain (not freezing)
24: Snow
25: Freezing drizzle or freezing rain
26: Thunderstorm (with or without precipitation)
27: Blowing or drifting snow or sand
28: Blowing or drifting snow or sand, visibility equal to or greater than 1 km
29: Blowing or drifting snow or sand, visibility less than 1 km
30: Fog
31: Fog or ice fog in patches
32: Fog or ice fog, has become thinner during the past hour
33: Fog or ice fog, no appreciable change during the past hour
34: Fog or ice fog, has begun or become thicker during the past hour
35: Fog, depositing rime
40: Precipitation
41: Precipitation, slight or moderate
42: Precipitation, heavy
43: Liquid precipitation, slight or moderate
44: Liquid precipitation, heavy
45: Solid precipitation, slight or moderate
46: Solid precipitation, heavy
47: Freezing precipitation, slight or moderate
48: Freezing precipitation, heavy
50: Drizzle
51: Drizzle, not freezing, slight
52: Drizzle, not freezing, moderate
53: Drizzle, not freezing, heavy
54: Drizzle, freezing, slight
55: Drizzle, freezing, moderate
56: Drizzle, freezing, heavy
57: Drizzle and rain, slight
58: Drizzle and rain, moderate or heavy
60: Rain
61: Rain, not freezing, slight
62: Rain, not freezing, moderate
63: Rain, not freezing, heavy
64: Rain, freezing, slight
65: Rain, freezing, moderate
66: Rain, freezing, heavy
67: Rain or drizzle and snow, slight
68: Rain or drizzle and snow, moderate or heavy
70: Snow
71: Snow, slight
72: Snow, moderate
73: Snow, heavy
74: Ice pellets, slight
75: Ice pellets, moderate
76: Ice pellets, heavy
80: Showers or intermittent precipitation
81: Rain showers or intermittent rain, slight
82: Rain showers or intermittent rain, moderate
83: Rain showers or intermittent rain, heavy
84: Rain showers or intermittent rain, violent
85: Snow showers or intermittent rain, slight

86: Snow showers or intermittent rain, moderate
87: Snow showers or intermittent rain, heavy
90: Thunderstorm
91: Thunderstorm, slight or moderate, with no precipitation
92: Thunderstorm, slight or moderate, with rain showers and/or snow showers
93: Thunderstorm, slight or moderate, with hail
94: Thunderstorm, heavy, with no precipitation
95: Thunderstorm, heavy, with rain showers and/or snow
96: Thunderstorm, heavy, with hail
99: Tornado

FLD LEN: 1
PRESENT-WEATHER-OBSERVATION quality automated atmospheric condition code
The code that denotes a quality status of a reported present weather observation from an automated station.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = No check
1 = Good
2 = Suspect
3 = Erroneous
9 = Missing

****

FLD LEN: 3
PAST-WEATHER-OBSERVATION manual occurrence identifier
The identifier that signifies the reporting of past weather.
DOM: A specific domain comprised of the characters in the ASCII character set.
AY1 - AY2 An indicator of up to 2 repeating fields of the following item:
PAST-WEATHER-OBSERVATION manual atmospheric condition code
PAST-WEATHER-OBSERVATION quality manual atmospheric condition code
PAST-WEATHER-OBSERVATION period quantity
PAST-WEATHER-OBSERVATION period quality code

FLD LEN: 1
PAST-WEATHER-OBSERVATION manual atmospheric condition code
The code that denotes a specific type of past weather observed manually.
DOM: A specific domain comprised of the characters in the ASCII character set.
Domain Value ID: Domain Value Definition Text
0: Cloud covering 1/2 or less of the sky throughout the appropriate period
1: Cloud covering more than 1/2 of the sky during part of the appropriate period and covering 1/2 or less during part of the period
2: Cloud covering more than 1/2 of the sky throughout the appropriate period
3: Sandstorm, duststorm or blowing snow
4: Fog or ice fog or thick haze
5: Drizzle
6: Rain
7: Snow, or rain and snow mixed
8: Shower(s)
9: Thunderstorm(s) with or without precipitation

FLD LEN: 1
PAST-WEATHER-OBSERVATION quality manual atmospheric condition code
The code that denotes a quality status of a reported past weather observation from a manual station.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = No check
1 = Good
2 = Suspect
3 = Erroneous
9 = Missing

FLD LEN: 2
PAST-WEATHER-OBSERVATION period quantity
The quantity of time over which a PAST-WEATHER-OBSERVATION occurred.
MIN: 01 MAX: 24 UNITS: hours

DOM: A general domain comprised of the ASCII characters 0-9.
99 = missing

FLD LEN: 1
PAST-WEATHER-OBSERVATION period quality code
The code that denotes a quality status of a reported past weather period.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = No check
1 = Good
2 = Suspect
3 = Erroneous
9 = Missing

****

FLD LEN: 3
PAST-WEATHER-OBSERVATION automated occurrence identifier
The identifier that signifies the reporting of present weather.
DOM: A specific domain comprised of the characters in the ASCII character set.
AZ1- AZ2 An indicator of the following item: (this may occur 0 - 2 times)
PAST-WEATHER-OBSERVATION automated atmospheric condition code
PAST-WEATHER-OBSERVATION quality automated atmospheric condition code
PAST-WEATHER-OBSERVATION period quantity
PAST-WEATHER-OBSERVATION period quality code

FLD LEN: 1
PAST-WEATHER-OBSERVATION automated atmospheric condition code
The code that denotes a specific type of past weather reported by an automated device.
DOM: A specific domain comprised of the characters in the ASCII character set.
0: No significant weather observed
1: Visibility reduced
2: Blowing phenomena, visibility reduced
3: Fog
4: Precipitation
5: Drizzle
6: Rain
7: Snow or ice pellets
8: Showers or intermittent precipitation
9: Thunderstorm

FLD LEN: 1
PAST-WEATHER-OBSERVATION quality automated atmospheric condition code
The code that denotes a quality status of a reported past weather observation from an automated station.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = No check
1 = Good
2 = Suspect
3 = Erroneous
9 = Missing

FLD LEN: 2
PAST-WEATHER-OBSERVATION period quantity
The quantity of time over which a PAST-WEATHER-OBSERVATION occurred.
MIN: 01 MAX: 24 UNITS: hours
DOM: A general domain comprised of the ASCII characters 0-9.
99 = Missing

FLD LEN: 1
PAST-WEATHER-OBSERVATION period quality code
The code that denotes a quality status of a reported past weather period.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = No check
1 = Good
2 = Suspect
3 = Erroneous

9 = Missing

****

FLD LEN: 3
RUNWAY-VISUAL-RANGE-OBSERVATION identifier
The identifier that indicates the occurrence of a runway visibility report.
DOM: A specific domain comprised of the ASCII characters.
ED1

FLD LEN: 2
RUNWAY-VISUAL-RANGE-OBSERVATION direction angle
The angle as measured from magnetic north to the runway along which the visibility is observed.
MIN: 01 MAX: 36 UNITS: Tens of degrees
SCALING FACTOR: 1/10
DOM: A general domain comprised of the characters in the ASCII character set.
99 = missing

FLD LEN: 1
RUNWAY-VISUAL-RANGE-OBSERVATION runway designator code
The code that denotes the left, right or center runway as the one to which the visibility applies.
DOM: A specific domain comprised of the ASCII characters:
L = left
C = center
R = right
U = unknown

FLD LEN: 4
RUNWAY-VISUAL-RANGE-OBSERVATION visibility dimension
The dimension of the horizontal distance that can be seen along the runway.
MIN: 0000 MAX: 5000 UNITS: meters
DOM: A general domain comprised of the ASCII characters 0-9.
9999 = missing

****

FLD LEN: 3
SKY-COVER-LAYER identifier
The identifier that represents a SKY-COVER-LAYER.
DOM: A specific domain comprised of the characters in the ASCII character set.
GA1-GA6 An indicator of up to 6 repeating fields of the following items:
SKY-COVER-LAYER coverage code
SKY-COVER-LAYER base height dimension
SKY-COVER-LAYER cloud type code

FLD LEN: 2
SKY-COVER-LAYER coverage code
The code that denotes the fraction of the total celestial dome covered by a SKY-COVER-LAYER.
DOM: A specific domain comprised of the characters in the ASCII character set.
00: None, SKC or CLR
01: One okta - 1/10 or less but not zero
02: Two oktas - 2/10 - 3/10, or FEW
03: Three oktas - 4/10
04: Four oktas - 5/10, or SCT
05: Five oktas - 6/10
06: Six oktas - 7/10 - 8/10
07: Seven oktas - 9/10 or more but not 10/10, or BKN
08: Eight oktas - 10/10, or OVC
09: Sky obscured, or cloud amount cannot be estimated
10: Partial obscuration
99: Missing

FLD LEN: 6
SKY-COVER-LAYER base height dimension

The height relative to a VERTICAL-REFERENCE-DATUM of the lowest surface of a cloud.
MIN: -00400 MAX: +35000 UNITS: Meters
SCALING FACTOR: 1
DOM: A general domain comprised of the numeric characters (0-9).
+99999 = missing

FLD LEN: 2
SKY-COVER-LAYER cloud type code
The code that denotes the classification of the clouds that comprise a SKY-COVER-LAYER.
DOM: A specific domain comprised of the characters in the ASCII character set.
00: Cirrus (Ci)
01: Cirrocumulus (Cc)
02: Cirrostratus (Cs)
03: Altocumulus (Ac)
04: Altostratus (As)
05: Nimbostratus (Ns)
06: Stratocumulus (Sc)
07: Stratus (St)
08: Cumulus (Cu)
09: Cumulonimbus (Cb)
10: Cloud not visible owing to darkness, fog, duststorm, sandstorm, or other analogous phenomena
99: Missing

****

FLD LEN: 3
SKY-CONDITION-OBSERVATION identifier
An indicator that denotes the start of a SKY-CONDITION-OBSERVATION data group.
DOM: A specific domain comprised of the characters in the ASCII character set.
GF1: An indicator of the occurrence of the following data items:
SKY-CONDITION-OBSERVATION total coverage code
SKY-CONDITION-OBSERVATION quality total coverage code
SKY-CONDITION-OBSERVATION total lowest cloud cover code
SKY-CONDITION-OBSERVATION quality total lowest cloud cover code
SKY-CONDITION-OBSERVATION low cloud genus code
SKY-CONDITION-OBSERVATION quality low cloud genus code
SKY-CONDITION-OBSERVATION lowest cloud base height dimension
SKY-CONDITION-OBSERVATION lowest cloud base height quality code
SKY-CONDITION-OBSERVATION mid cloud genus code
SKY-CONDITION-OBSERVATION quality mid cloud genus code
SKY-CONDITION-OBSERVATION high cloud genus code
SKY-CONDITION-OBSERVATION quality high cloud genus code

FLD LEN: 2
SKY-CONDITION-OBSERVATION total coverage code
The code that denotes the fraction of the total celestial dome covered by clouds or other obscuring phenomena.
DOM: A specific domain comprised of the characters in the ASCII character set.
00: None, SKC or CLR
01: One okta - 1/10 or less but not zero
02: Two oktas - 2/10 - 3/10, or FEW
03: Three oktas - 4/10
04: Four oktas - 5/10, or SCT
05: Five oktas - 6/10
06: Six oktas - 7/10 - 8/10
07: Seven oktas - 9/10 or more but not 10/10, or BKN
08: Eight oktas - 10/10, or OVC
09: Sky obscured, or cloud amount cannot be estimated
10: Partial obscuration
99: Missing

FLD LEN: 1
SKY-CONDITION-OBSERVATION quality total coverage code
The code that denotes a quality status of a reported total sky coverage code.
DOM: A specific domain comprised of the characters in the ASCII character set.

0 = No check
1 = Good
2 = Suspect
3 = Erroneous
9 = Missing

FLD LEN: 2
SKY-CONDITION-OBSERVATION total lowest cloud cover code
The code that represents the fraction of the celestial dome covered by all low clouds present. If no low clouds are present; the code denotes the fraction covered by all middle level clouds present.
DOM: A specific domain comprised of the characters in the ASCII character set.
00: None
01: One okta or 1/10 or less but not zero
02: Two oktas or 2/10 - 3/10
03: Three oktas or 4/10
04: Four oktas or 5/10
05: Five oktas or 6/10
06: Six oktas or 7/10 - 8/10
07: Seven oktas or 9/10 or more but not 10/10
08: Eight oktas or 10/10
09: Sky obscured, or cloud amount cannot be estimated
99: Missing

FLD LEN: 1
SKY-CONDITION-OBSERVATION quality total lowest cloud cover code
The code that denotes a quality status of a reported total lowest cloud cover code.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = No check
1 = Good
2 = Suspect
3 = Erroneous
9 = Missing

FLD LEN: 2
SKY-CONDITION-OBSERVATION low cloud genus code
The code that denotes a type of low cloud.
DOM: A specific domain comprised of the characters in the ASCII Character set.
00: No low clouds
01: Cumulus humulis or Cumulus fractus other than of bad weather or both
02: Cumulus mediocris or congestus, with or without Cumulus of species fractus or humulis or Stratocumulus all having bases at the same level
03: Cumulonimbus calvus, with or without Cumulus, Stratocumulus or Stratus
04: Stratocumulus cumulogenitus
05: Stratocumulus other than Stratocumulus cumulogenitus
06: Stratus nebulosus or Stratus fractus other than of bad weather, or both
07: Stratus fractus or Cumulus fractus of bad weather, or both (pannus) usually below Altostratus or Nimbostratus
08: Cumulus and Stratocumulus other than Stratocumulus cumulogenitus, with bases at different levels
09: Cumulonimbus capillatus (often with an anvil), with or without Cumulonimbus calvus, Cumulus, Stratocumulus, Stratus or pannus
99: Missing

FLD LEN: 1
SKY-CONDITION-OBSERVATION quality low cloud genus code
The code that denotes a quality status of a reported low cloud type.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = No check
1 = Good
2 = Suspect
3 = Erroneous
9 = Missing

FLD LEN: 5
SKY-CONDITION-OBSERVATION lowest cloud base height dimension
The height, above ground level (AGL), of the base of the lowest cloud.

MIN: 00000 MAX: 21000 UNITS: Meters
SCALING FACTOR: 1
DOM: A general domain comprised of the numeric characters (0-9).
99999 = missing.

FLD LEN: 1
SKY-CONDITION-OBSERVATION lowest cloud base height quality code
The code that denotes a quality status of a lowest cloud base height.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = No check
1 = Good
2 = Suspect
3 = Erroneous
9 = Missing

FLD LEN: 2
SKY-CONDITION-OBSERVATION mid cloud genus code
The code that denotes a type of middle level cloud.
DOM: A specific domain comprised of the characters in the ASCII character set.
00: No middle clouds
01: Altostratus translucidus
02: Altostratus opacus or Nimbostratus
03: Altocumulus translucidus at a single level
04: Patches (often lenticular) of Altocumulus translucidus, continually changing and occurring at one or more levels
05: Altocumulus translucidus in bands, or one or more layers of Altocumulus translucidus or opacus, progressively invading the sky; these Altocumulus clouds generally thicken as a whole
06: Altocumulus cumulogentis (or cumulonimbogentus)
07: Altocumulus translucidus or opacus in two or more layers, or Altocumulus opacus in a single layer, not progressively invading the sky, or Altocumulus with Altostratus or Nimbostratus
08: Altocumulus castellanus or floccus
09: Altocumulus of a chaotic sky; generally at several levels
99: Missing

FLD LEN: 1
SKY-CONDITION-OBSERVATION quality mid cloud genus code
The code that denotes a quality status of a reported mid cloud type.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = No check
1 = Good
2 = Suspect
3 = Erroneous
9 = Missing

FLD LEN: 2
SKY-CONDITION-OBSERVATION high cloud genus code
The code that denotes a type of high cloud.
DOM: A specific domain comprised of the characters in the ASCII character set.
00: No High Clouds
01: Cirrus fibratus, sometimes uncinus, not progressively invading the sky
02: Cirrus spissatus, in patches or entangled sheaves, which usually do not increase and sometimes seem to be the remains of the upper part of a Cumulonimbus; or Cirrus castellanus or floccus
03: Cirrus spissatus cumulonimbogenitus
04: Cirrus unicinus or fibratus, or both, progressively invading the sky; they generally thicken as a whole
05: Cirrus (often in bands) and Cirrostratus, or Cirrostratus alone, progressively invading the sky; they generally thicken as a whole, but the continuous veil does not reach 45 degrees above the horizon
06: Cirrus (often in bands) and Cirrostratus, or Cirrostratus alone, progressively invading the sky; they generally thicken as a whole; the continuous veil extends more than 45 degrees above the horizon, without the sky being totally covered.
07: Cirrostratus covering the whole sky
08: Cirrostratus not progressively invading the sky and not entirely covering it

09: Cirrocumulus alone, or Cirrocumulus predominant among the High clouds
99: Missing

FLD LEN: 1
SKY-CONDITION-OBSERVATION quality high cloud genus code
The code that denotes a quality status of a reported high cloud type.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = No check
1 = Good
2 = Suspect
3 = Erroneous
9 = Missiing

****

FLD LEN: 3
SKY-COVER-SUMMATION-STATE identifier
The identifier that denotes the availability of a SKY-COVER-SUMMATION-STATE.
DOM: A specific domain comprised of the ASCII characters.
GD1 - GD4 An indicator of up to 4 repeating fields of the following items:
SKY-COVER-SUMMATION-STATE coverage code
SKY-COVER-SUMMATION-STATE height dimension
SKY-COVER-SUMMATION-STATE characteristic code

FLD LEN: 1
SKY-COVER-SUMMATION-STATE coverage code
The code that denotes the portion of the total celestial dome covered by all layers of clouds and other obscuring phenomena at or below a given height.
DOM: A specific domain comprised of the ASCII characters
0: Clear - No coverage
1: FEW - 2/8 or less coverage (not including zero)
2: SCATTERED - 3/8-4/8 coverage
3: BROKEN - 5/8-7/8 coverage
4: OVERCAST - 8/8 coverage
5: OBSCURED
6: PARTIALLY OBSCURED
9: MISSING

FLD LEN: 6
SKY-COVER-SUMMATION-STATE height dimension
The height above ground level (AGL) of the base of the cloud layer or obscuring phenomena.
MIN: -00400 MAX: +35000 UNITS: meters
DOM: A general domain compirsed of the ASCII characters 0-9, a plus (+) and a minus sign (-).
+99999 = missing

FLD LEN: 1
SKY-COVER-SUMMATION-STATE characteristic code
The code that represents a characteristic of a specific cloud or other obscuring phenomena layer.
DOM: A specific domain comprised of the characters in the ASCII character set.
1: Variable height
2: Variable amount
3: Thin clouds
9: Missing

****

FLD LEN: 3
BELOW-STATION-CLOUD-LAYER identifier
The identifier that represents a BELOW-STATION-CLOUD-LAYER.
DOM: A specific domain comprised of the characters in the ASCII character set.
GG1-GG6 An indicator of up to 6 repeating fields of the following items:
BELOW-STATION-CLOUD-LAYER coverage code
BELOW-STATION-CLOUD-LAYER top height dimension
BELOW-STATION-CLOUD-LAYER type code
BELOW-STATION-CLOUD-LAYER top code

FLD LEN: 2
BELOW-STATION-CLOUD-LAYER coverage code
The code that denotes the extent of coverage of a BELOW-STATION-CLOUD-LAYER.
DOM: A specific domain comprised of the characters in the ASCII character set.
00: None
01: One okta - 1/10 or less but not zero
02: Two oktas - 2/10 - 3/10
03: Three oktas - 4/10
04: Four oktas - 5/10
05: Five oktas - 6/10
06: Six oktas - 7/10 - 8/10
07: Seven oktas - 9/10 or more but not 10/10
08: Eight oktas - 10/10
09: Sky obscured, or cloud amount cannot be estimated
10: Partial obscuration
99: Missing

FLD LEN: 5
BELOW-STATION-CLOUD-LAYER top height dimension
The height above mean sea level (MSL) of the top of a BELOW-STATION-CLOUD-LAYER.
MIN: 00000 MAX: 35000 UNITS: Meters
SCALING FACTOR: 1
DOM: A general domain comprised of the numeric characters (0-9).
99999 = missing

FLD LEN: 2
BELOW-STATION-CLOUD-LAYER type code
The code that denotes the classification of the clouds that comprise a BELOW-STATION-CLOUD-LAYER.
DOM: A specific domain comprised of the characters in the ASCII character set.
00: Cirrus (Ci)
01: Cirrocumulus (Cc)
02: Cirrostratus (Cs)
03: Altocumulus (Ac)
04: Altostratus (As)
05: Nimbostratus (Ns)
06: Stratocumulus (Sc)
07: Stratus (St)
08: Cumulus (Cu)
09: Cumulonimbus (Cb)
10: Cloud not visible owing to darkness, fog, dust storm, sandstorm, or other analogous phenomena
99: Missing

FLD LEN: 2
BELOW-STATION-CLOUD-LAYER top code
The code that denotes the characteristics of the upper surface of a BELOW-STATION-CLOUD-LAYER
DOM: A specific domain comprised of the characters in the ASCII character set.
00: Isolated cloud or fragments of clouds
01: Continuous flat tops
02: Broken cloud - small breaks, flat tops
03: Broken cloud - large breaks, flat tops
04: Continuous cloud, undulation tops
05: Broken cloud - small breaks, undulating tops
06: Broken cloud - large breaks, undulating tops
07: Continuous or almost continuous with towering clouds above the top of the layer
08: Groups of waves with towering clouds above the top of the layer
09: Two of more layers at different levels
99: Missing

****

FLD LEN: 3
SUNSHINE-OBSERVATION identifier
The identifier that denotes the availability of sunshine information.

DOM: A specific domain comprised of the ASCII characters
GJ1

FLD LEN: 4
SUNSHINE-OBSERVATION sunshine duration quantity
The quantity of time sunshine occurred over the reporting period.
MIN: 0000 MAX: 6000 UNITS: minutes
DOM: A general domain comprised of the ASCII characters 0-9.

****

FLD LEN: 3
GROUND-SURFACE-OBSERVATION identifier
The identifier that denotes the availability of a GROUND-SURFACE-OBSERVATION.
DOM: A specific domain comprised of the characters in the ASCII character set.
IA1: An indicator of the occurrence of the following data item:
GROUND-SURFACE-OBSERVATION code

FLD LEN: 2
GROUND-SURFACE-OBSERVATION code
The code that denotes the physical condition of the ground's surface.
DOM: A specific domain comprised of the characters in the ASCII character set.
NOTE: Code values 10-19 indicate the state of the ground without snow or measurable ice cover.
00 : Surface of ground dry (no appreciable amount of dust or loose sand)
01: Surface of ground dry (without cracks and no appreciable amount of dust or loose sand and without snow or measurable ice cover)
02: Extremely dry with cracks (without snow or measurable ice cover)
03: Loose dry dust or sand not covering ground completely (without snow or measurable ice cover)
04: Loose dry dust or sand covering more than one-half of ground (but not completely)
05: Loose dry dust or sand covering ground completely
06: Thin cover of loose dry dust or sand covering ground completely (without snow or measurable ice cover)
07: Moderate or thick cover of loose dry dust or sand covering ground completely (without snow or measurable ice cover)
08: Surface of ground moist
09: Surface of ground moist (without snow or measurable ice cover)
10: Surface of ground wet (standing water in small or large pools on surface)
11: Surface of ground wet (standing water in small or large pools on surface without snow or measurable ice cover)
12: Flooded (without snow or measurable ice cover)
13: Surface of ground frozen
14: Surface of ground frozen (without snow or measurable ice cover)
15: Glaze or ice on ground, but no snow or melting snow
16: Glaze on ground (without snow or measurable ice cover)
17: Ground predominantly covered by ice
18: Snow or melting snow (with or without ice) covering less than one-half of the ground
19: Snow or melting snow (with or without ice) covering more than one-half of the ground but ground not completely covered
20: Snow or melting snow (with or without ice) covering ground completely
21: Loose dry snow covering less than one-half of the ground
22: Loose dry snow covering at least one half of the ground (but not completely)
23: Even layer of loose dry snow covering ground completely
24: Uneven layer of loose dry snow covering ground completely
25: Compact or wet snow (with or without ice) covering less than one-half of the ground
26: Compact or wet snow (with or without ice) covering at least one-half of the ground but

ground not completely covered
27: Even layer of compact or wet snow covering ground completely
28: Uneven layer of compact or wet snow covering ground completely
29: Snow covering ground completely; deep drifts
30. Lose dry dust or sand covering one-half of the ground (but not completely)
31. Loose dry snow, dust or sand covering ground completely

****

FLD LEN: 3
GROUND-SURFACE-OBSERVATION minimum-temperature identifier
The identifier that denotes the availability of GROUND-SURFACE-OBSERVATION minimum temperature data.
DOM: A specific domain comprised of the characters in the ASCII character set.
IA2: An indicator of the occurrence of the following data item:
GROUND-SURFACE-OBSERVATION minimum-temperature period quantity
GROUND-SURFACE-OBSERVATION minimum temperature

FLD LEN: 3
GROUND-SURFACE-OBSERVATION minimum-temperature period quantity
The quantity of time over which the ground temperature was sampled to determine the minimum temperature.
MIN: 001 MAX: 480 UNITS: hours
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).
999 = Missing

FLD LEN: 5
GROUND-SURFACE-OBSERVATION minimum temperature
The minimum temperature of the ground's surface recorded during the observation period.
MIN: -1100 MAX: +1500 UNITS: Degrees Celsius
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9), a plus sign (+), and a minus sign(-).

****

FLD LEN: 3
EXTREME-AIR-TEMPERATURE identifier
The identifier that denotes the start of an EXTREME-AIR-TEMPERATURE data section.
DOM: A specific domain comprised of the characters in the ASCII character set.
KA1-KA2 An indicator of up to 2 repeating fields of the following items:
EXTREME-AIR-TEMPERATURE period quantity
EXTREME-AIR-TEMPERATURE code
EXTREME-AIR-TEMPERATURE air temperature

FLD LEN: 3
EXTREME-AIR-TEMPERATURE period quantity
The quantity of time over which temperatures were sampled to determine the EXTREME-AIR-TEMPERATURE.
MIN: 001 MAX: 480 UNITS: Hours:
SCALING FACTOR: 10
DOM: A general domain comprised of the ASCII character set
999 = missing

FLD LEN: 1
EXTREME-AIR-TEMPERATURE code
The code that denotes an EXTREME-AIR-TEMPERATURE as a maximum or a minimum.
DOM: A specific domain comprised of the characters in the ASCII character set.
N: Minimum temperature
M: Maximum temperature
9: Missing

FLD LEN: 5
EXTREME-AIR-TEMPERATURE temperature

The temperature of the high or low air temperature for a given period.
MIN: -1100 MAX: +0630 UNITS: Degrees Celsius
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters(0-9), a plus sign (+), and a minus sign (-).
+9999 = Missing

****

FLD LEN: 3
ATMOSPHERIC-PRESSURE-OBSERVATION identifier
The identifier that denotes the start of an ATMOSPHERIC-PRESSURE-OBSERVATION data section.
DOM: A specific domain comprised of the characters in the ASCII character set.
MA1 An indicator of the occurrence of the following items:
ATMOSPHERIC-PRESSURE-OBSERVATION altimeter setting rate
ATMOSPHERIC-PRESSURE-OBSERVATION altimeter quality code
ATMOSPHERIC-PRESSURE-OBSERVATION station pressure rate
ATMOSPHERIC-PRESSURE-OBSERVATION station pressure quality code

FLD LEN: 5
ATMOSPHERIC-PRESSURE-OBSERVATION altimeter setting rate
The pressure value to which an aircraft altimeter is set so that it will indicate the altitude relative to mean sea level of an aircraft on the ground at the location for which the value was determined.
MIN: 08635 MAX: 10904 UNITS: Hectopascals
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).
Missing = 99999

FLD LEN: 1
ATMOSPHERIC-PRESSURE-OBSERVATION altimeter quality code
The code that denotes a quality status of an altimeter setting rate.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = No check
1 = Good
2 = Suspect
3 = Erroneous
9 = Missing

FLD LEN: 5
ATMOSPHERIC-PRESSURE-OBSERVATION station pressure rate
The atmospheric pressure at the observation point.
MIN: 04500 MAX: 10900 UNITS: Hectopascals
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).
99999 = Missing.

FLD LEN: 1
ATMOSPHERIC-PRESSURE-OBSERVATION station pressure quality code
The code that denotes a quality status of the station pressure of an ATMOSPHERIC-PRESSURE-OBSERVATION.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = No check
1 = Good
2 = Suspect
3 = Erroneous
9 = Missing

****

FLD LEN: 3
ATMOSPHERIC-PRESSURE-CHANGE identifier
The identifier that denotes the start of an ATMOSPHERIC-PRESSURE-CHANGE data section.
DOM: A specific domain comprised of the characters in the ASCII character set.
Domain Value ID: Domain Value Definition Text
MD1 An indicator of the occurrence of the following items:
ATMOSPHERIC-PRESSURE-CHANGE tendency code
ATMOSPHERIC-PRESSURE-CHANGE quality tendency code

ATMOSPHERIC-PRESSURE-CHANGE three hour quantity
ATMOSPHERIC-PRESSURE-CHANGE quality three hour code
ATMOSPHERIC-PRESSURE-CHANGE twenty four hour quantity
ATMOSPHERIC-PRESSURE-CHANGE quality twenty four hour code

FLD LEN: 1
ATMOSPHERIC-PRESSURE-CHANGE tendency code
The code that denotes the characteristics of an ATMOSPHERIC-PRESSURE-CHANGE that occurs over a period of three hours.
DOM: A specific domain comprised of the characters in the ASCII character set.
Domain Value ID: Domain Value Definition Text
0: Increasing, then decreasing; atmospheric pressure the same or higher than 3 hours ago
1: Increasing then steady; or increasing, then increasing more slowly; atmospheric pressure now higher than 3 hours ago
2: Increasing (steadily or unsteadily); atmospheric pressure now higher than 3 hours ago
3: Decreasing or steady, then increasing; or increasing, then increasing more rapidly; atmospheric pressure now higher than 3 hours ago
4: Steady; atmospheric pressure the same as 3 hours ago
5: Decreasing, then increasing; atmospheric pressure the same or lower than 3 hours ago
6: Decreasing, then steady; or decreasing, then decreasing more slowly; atmospheric pressure now lower than 3 hours ago
7: Decreasing (steadily or unsteadily); atmospheric pressure now lower than 3 hours ago
8: Steady or increasing, then decreasing; or decreasing, then decreasing more rapidly; atmospheric pressure now lower than 3 hours ago
9: Missing

FLD LEN: 1
ATMOSPHERIC-PRESSURE-CHANGE quality tendency code
The code that denotes a quality status of the tendency of an ATMOSPHERIC-PRESSURE-CHANGE.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = No check
1 = Good
2 = Suspect
3 = Erroneous
9 = Missing

FLD LEN: 3
ATMOSPHERIC-PRESSURE-CHANGE three hour quantity
The absolute value of the quantity of change in atmospheric pressure measured at the beginning and end of a three hour period.
MIN: 000 MAX: 500 UNITS: Hectopascals
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).
Missing = 999

FLD LEN: 1
ATMOSPHERIC-PRESSURE-CHANGE quality three hour code
The code that denotes the quality status of the three hour quantity for an ATMOPSHERIC-PRESSURE-CHANGE.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = No check
1 = Good
2 = Suspect
3 = Erroneous
9 = Missing

FLD LEN: 4
ATMOSPHERIC-PRESSURE-CHANGE twenty four hour quantity
The quantity of change in atmospheric pressure measured at the beginning and end of a twenty four hour period.
MIN: -800 MAX: +800 UNITS: Hectopascals
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters(0-9), a plus sign (+), and a minus sign (-).
+999 = Missing

FLD LEN: 1
ATMOSPHERIC-PRESSURE-CHANGE quality twenty four hour code
The code that denotes a quality status of a reported twenty four hour ATMOSPHERIC-PRESSURE-CHANGE.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = No check
1 = Good
2 = Suspect
3 = Erroneous
9 = Missing

****

FLD LEN: 3
GEOPOTENTIAL-HEIGHT-ISOBARIC-LEVEL identifier
The identifier that denotes the availability of GEOPOTENTIAL-HEIGHT-ISOBARIC-LEVEL data.
DOM: A specific domain comprised of the characters in the ASCII character set.
ME1: An indicator of the occurrence of the following data items:
GEOPOTENTIAL-HEIGHT-ISOBARIC-LEVEL code
GEOPOTENTIAL-HEIGHT-ISOBARIC-LEVEL height dimension

FLD LEN: 1
GEOPOTENTIAL-HEIGHT-ISOBARIC-LEVEL code
The code that denotes the isobaric surface used to represent geopotential height.
DOM: A specific domain comprised of the characters in the ASCII character set.
Domain Value ID: Domain Value Definition Text
1: 1000 hectopascals
2: 925 hectopascals
3: 850 hectopascals
4: 700 hectopascals
5: 500 hectopascals
9: Missing

FLD LEN: 4
GEOPOTENTIAL-HEIGHT-ISOBARIC-LEVEL height dimension
The height of a GEOPOTENTIAL-HEIGHT-ISOBARIC-LEVEL
MIN: 0000 MAX: 9998 UNITS: Geopotential Meters
SCALING FACTOR: 1
DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing

****

FLD LEN: 3
SUPPLEMENTARY-WIND-OBSERVATION identifier
The identifier that denotes the start of a SUPPLEMENTARY-WIND-OBSERVATION data section.
DOM: A specific domain comprised of the characters in the ASCII character set.
OA1 - OA3: An indicator of up to 3 occurrences of the following item:
SUPPLEMENTARY-WIND-OBSERVATION type code
SUPPLEMENTARY-WIND-OBSERVATION period quantity
SUPPLEMENTARY-WIND-OBSERVATION speed rate

FLD LEN: 1
SUPPLEMENTARY-WIND-OBSERVATION type code
The code that denotes a type of SUPPLEMENTARY-WIND-OBSERVATION.
DOM: A specific domain comprised of the ASCII characters.
1 = Average speed of prevailing wind
2 = Mean wind speed
3 = Maximum instantaneous wind speed
4 = Maximum gust speed
5 = Maximum mean wind speed
6 = Maximum 1-minute mean wind speed
9 = Missing

FLD LEN: 2
SUPPLEMENTARY-WIND-OBSERVATION period quantity

The quantity of time over which a SUPPLEMENTARY-WIND-OBSERVATION occurred.
MIN: 01 MAX: 48 UNITS: Hours
DOM: A general domain comprised of the ASCII characters.
99 = Missing

FLD LEN: 4
SUPPLEMENTARY-WIND-OBSERVATION speed rate
The rate of horizontal speed of air reported in the SUPPLEMENTARY-WIND-OBSERVATION.
MIN: 0000 MAX: 2000 UNITS: Meters per Second
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing

****

FLD LEN: 3
WIND-GUST-OBSERVATION identifier
The identifier that denotes the start of a WIND-GUST-OBSERVATION data section.
DOM: A specific domain comprised of the characters in the ASCII character set.
OC1: An indicator of the occurrence of the following item:
WIND-GUST-OBSERVATION speed rate
WIND-GUST-OBSERVATION quality code

FLD LEN: 4
WIND-GUST-OBSERVATION speed rate
The rate of speed of a wind gust.
MIN: 0050 MAX: 1100 UNITS: Meters per second
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).

FLD LEN: 1
WIND-GUST-OBSERVATION quality code
The code that denotes a quality status of a reported WIND-GUST-OBSERVATION speed rate.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = No check
1 = Good
2 = Suspect
3 = Erroneous
9 = Missing

****

FLD LEN: 3
SEA-SURFACE-TEMPERATURE-OBSERVATION identifier
The identifier that denotes the start of a SEA-SURFACE-TEMPERATURE-OBSERVATION temperature data section.
DOM: A specific domain comprised of the characters in the ASCII character.
SA1: An indicator of the occurrence of the following item:
SEA-SURFACE-TEMPERATURE-OBSERVATION temperature

FLD LEN: 4
SEA-SURFACE-TEMPERATURE-OBSERVATION temperature
The temperature of the water at the surface.
MIN: -050 MAX: +450 UNITS: Degrees Celsius
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters(0-9), a plus sign (+), and a minus sign (-).

****

FLD LEN: 3
WAVE-MEASUREMENT identifier
The identifier that represents the availability of a WAVE-MEASUREMENT.
DOM: A specific domain comprised of the characters in the ASCII character set.
UA1: An indicator of the occurrence of the following data items:
WAVE-MEASUREMENT method code

WAVE-MEASUREMENT wave period quantity
WAVE-MEASUREMENT wave height dimension
WAVE-MEASUREMENT sea state code

FLD LEN: 1
WAVE-MEASUREMENT method code
A code that represents the method used to obtain a WAVE-MEASUREMENT.
DOM: A specific domain comprised of the ASCII characters
M: Manual
I: Instrumental
9: Missing

FLD LEN: 2
WAVE-MEASUREMENT wave period quantity
The quantity of time required for two successive wave crests to pass a fixed point.
MIN: 00 MAX: 14 UNITS: Seconds
SCALING FACTOR: 1
DOM: A general domain comprised of the numeric characters (0-9).
99 = Missing.

FLD LEN: 3
WAVE-MEASUREMENT wave height dimension
The height of a wave measured from trough to crest.
MIN: 000 MAX: 500 UNITS: Meters
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).
999 = Missing.

FLD LEN: 2
WAVE-MEASUREMENT sea state code
The code that denotes the roughness of the surface of the sea in terms of average wave height.
DOM: A specific domain comprised of the ASCII character set.
00: Calm, glassy - wave height = 0 meters
01: Calm, rippled - wave height = 0-0.1 meters
02: Smooth, wavelets - wave height = 0.1-0.5 meters
03: Slight, wave height = 0.5-1.25 meters
04: Moderate - wave height 1.25-2.5 meters
05: Rough - wave height = 2.5-4.0 meters
06: Very rough - wave height = 4.0-6.0 meters
07: High - wave height = 6.0-9.0 meters
08: Very high - wave height 9.0-14.0 meters
09: Phenomenal - wave height = over 14.0 meters
99: Missing

****

FLD LEN: 3
WAVE-MEASUREMENT primary swell identifier
The identifier that denotes the availability of primary swell data.
DOM: A specific domain comprised of the characters in the ASCII character set.
UG1: An indicator of the occurrence of the following data items:
WAVE-MEASUREMENT primary swell period quantity
WAVE-MEASUREMENT primary swell height dimension
WAVE-MEASUREMENT primary swell direction angle

FLD LEN: 2
WAVE-MEASUREMENT primary swell period quantity
The quantity of time required for two successive primary swell wave crests to pass a fixed point.
MIN: 00 MAX: 14 UNITS: Seconds
SCALING FACTOR: 1
DOM: A general domain comprised of the numeric characters (0-9).
99 = Missing

FLD LEN: 3
WAVE-MEASUREMENT primary swell height dimension
The height of a primary swell wave measured from the trough to the crest.

MIN: 000 MAX: 500 UNITS: Meters
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).
999 = Missing

FLD LEN: 3
WAVE-MEASUREMENT primary swell direction angle
The angle measured clockwise from true north to the direction from which primary swell waves are coming.
MIN: 001 MAX: 360 UNITS: Angular Degrees
SCALING FACTOR: 1
DOM: A general domain comprised of the numeric characters (0-9).
999 = Missing

****

FLD LEN: 3
WAVE-MEASUREMENT secondary swell identifier
An indicator that denotes the start of a WAVE-MEASUREMENT secondary swell group.
DOM: A specific domain comprised of the characters in the ASCII character set.
Domain Value ID: Domain Value Definition Text
UG2: An indicator of the occurrence of the following data items:
WAVE-MEASUREMENT secondary swell period quantity
WAVE-MEASUREMENT secondary swell height dimension
WAVE-MEASUREMENT secondary swell direction angle

FLD LEN: 2
WAVE-MEASUREMENT secondary swell period quantity
The quantity of time required for two successive secondary swell wave crests to pass a fixed point.
MIN: 00 MAX: 14 UNITS: Seconds
SCALING FACTOR: 1
DOM: A general domain comprised of the numeric characters (0-9).
99 = Missing

FLD LEN: 3
WAVE-MEASUREMENT secondary swell height dimension
The height of a secondary swell wave measured from the trough to the crest.
MIN: 000 MAX: 500 UNITS: Meters
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).
99 = Missing

FLD LEN: 3
WAVE-MEASUREMENT secondary swell direction angle
The angle measured clockwise from true north to the direction from which secondary swell waves are coming.
MIN: 001 MAX: 360 UNITS: Angular Degrees
SCALING FACTOR: 1
DOM: A general domain comprised of the numeric characters (0-9).
999 = Missing

****

FLD LEN: 3
PLATFORM-ICE-ACCRETION identifier
The identifier that denotes the availability of PLATFORM-ICE-ACCRETION data.
DOM: A specific domain comprised of the characters in the ASCII character set.
WA1: An indicator of the occurrence of the following data items:
PLATFORM-ICE-ACCRETION source code
PLATFORM-ICE-ACCRETION thickness dimension
PLATFORM-ICE-ACCRETION tendency code

FLD LEN: 1
PLATFORM-ICE-ACCRETION source code
The code that denotes the source of the ice that builds up on a marine platform's structure.
DOM: A specific domain composed of the following qualitative data values:

Domain Value ID: Domain Value Definition Text
1: Icing from ocean spray
2: Icing from fog
3: Icing from spray and fog
4: Icing from rain
5: Icing from spray and rain
9: Missing

FLD LEN: 3
PLATFORM-ICE-ACCRETION thickness dimension
The thickness of the ice that has accumulated on a marine platform.
MIN: 000 MAX: 998 UNITS: centimeters
SCALING FACTOR: 10
DOM: A specific domain composed of the integer values (0 - 9).
999 = Missing

FLD LEN: 1
PLATFORM-ICE-ACCRETION tendency code
The code that denotes the rate of change of ice thickness on a marine platform.
DOM: A specific domain composed of the following qualitative data values:
Domain Value ID: Domain Value Definition Text
0: Ice not building up
1: Ice building up slowly
2: Ice building up rapidly
3: Ice melting or breaking up slowly
4: Ice melting or breaking up rapidly

9: Missing

****

FLD LEN: 3
WATER-SURFACE-ICE-HISTORICAL-OBSERVATION identifier.
The identifier that denotes the availability of a WATER-SURFACE-ICE-HISTORICAL-OBSERVATION.
DOM: A specific domain comprised of the characters in the ASCII character set.
WG1: An indicator of the occurrence of the following data item:
OCEAN-ICE-OBSERVATION edge bearing code
WATER-SURFACE-ICE-HISTORICAL-OBSERVATION edge distance dimension
WATER-SURFACE-ICE-HISTORICAL-OBSERVATION edge orientation code
WATER-SURFACE-ICE-HISTORICAL-OBSERVATION formation type code
WATER-SURFACE-ICE-HISTORICAL-OBSERVATION navigation effect code

FLD LEN: 2
OCEAN-ICE-OBSERVATION edge bearing code
The code that denotes the true bearing, measured from the reporting platform to the closest point of the principle ice edge.
DOM: A specific domain composed of the following qualitative data values:
00: Ship in shore or flaw lead
01: Principal ice edge towards NE
02: Principal ice edge towards E
03: Principal ice edge towards SE
04: Principal ice edge towards S
05: Principal ice edge towards SW
06: Principal ice edge towards W
07: Principal ice edge towards NW
08: Principal ice edge towards N
09: Not determined (ship in ice)
10: Unable to report, because of darkness, lack of visibility or because only ice of land origin is visible
99: Missing

COM: 1. If more than one ice edge can be stated, the nearest or most important shall be reported
2. The bearing shall refer to the true and not to the magnetic north

FLD LEN: 2
WATER-SURFACE-ICE-HISTORICAL-OBSERVATION edge distance dimension

The distance from the reporting ship's location to the nearest point on the ice edge.
MIN: 00 MAX: 98 UNITS: Kilometers
DOM: A general domain comprised of the ASCII characters 0-9
99 = missing

FLD LEN: 2
WATER-SURFACE-ICE-HISTORICAL-OBSERVATION edge orientation code
The code that denotes the orientation of the principal ice edge and the direction relative to which the ice lies.
DOM: A specific domain comprised of the ASCII characters
00: Orientation of ice edge impossible to estimate--ship outside the ice
01: Ice edge lying in a direction NE to SW with ice situated to the NW
02: Ice edge lying in a direction E to W with ice situated to the N
03: Ice edge lying in a direction SE to NW with ice situated to the NE
04: Ice edge lying in a direction S to N with ice situated to the E
05: Ice edge lying in a direction SW to NE with ice situated to the SE
06: Ice edge lying in a direction W to E with ice situated to the S
07: Ice edge lying in a direction NW to SE with ice situated to the SW
08: Ice edge lying in a direction N to S with ice situated to the W
09: Orientation of ice edge impossible to estimate--ship inside the ice
99: Missing

FLD LEN: 2
WATER-SURFACE-ICE-HISTORICAL-OBSERVATION formation type code
The code that denotes the type of ice formation reported in the WATER-SURFACE-ICE-HISTORICAL-OBSERVATION.
DOM: A specific domain comprised of the ASCII characters
00: No ice (0 may be used to report ice blink and then a direction must be reported)
01: New ice
02: Fast ice
03: Pack-ice/drift-ice
04: Packed (compact) slush or sludge
05: Shore lead
06: Heavy fast ice
07: Heavy pack-ice/drift-ice
08: Hummocked ice
09: Icebergs-icebergs can be reported in plain language
99: Missing

FLD LEN: 2
WATER-SURFACE-ICE-HISTORICAL-OBSERVATION navigation effect code
The code that denotes the effect of ice on navigation.
DOM: A specific domain comprised of the ASCII characters
00: Navigation unobstructed
01: Navigation unobstructed for steamers, difficult for sailing ships
02: Navigation difficult for low-powered steamers, closed to sailing ships
03: Navigation possible only for powerful steamers
04: Navigation possible only for steamers constructed to withstand ice pressure
05: Navigation possible with the assistance of ice-breakers
06: Channel open in the solid ice
07: Navigation temporarily closed
08: Navigation closed
09: Navigation conditions unknown, e.g., owing to bad weather
99: Missing

****

FLD LEN: 3
WATER-SURFACE-ICE-OBSERVATION identifier.
The identifier that denotes the availability of a WATER-SURFACE-ICE-OBSERVATION.
DOM: A specific domain comprised of the characters in the ASCII character set.
WD1: An indicator of the occurrence of the following data item:
OCEAN-ICE-OBSERVATION edge bearing code
WATER-SURFACE-ICE-OBSERVATION uniform concentration rate
WATER-SURFACE-ICE-OBSERVATION non-uniform concentration code

WATER-SURFACE-ICE-OBSERVATION ship relative position code
WATER-SURFACE-ICE-OBSERVATION ship penetrability code
WATER-SURFACE-ICE-OBSERVATION ice trend code
WATER-SURFACE-ICE-OBSERVATION development code
WATER-SURFACE-ICE-OBSERVATION growler-bergy-bit presence code
WATER-SURFACE-ICE-OBSERVATION growler-bergy-bit quantity
WATER-SURFACE-ICE-OBSERVATION iceberg quantity

FLD LEN: 2
OCEAN-ICE-OBSERVATION edge bearing code
The code that denotes the true bearing, measured from the reporting platform to the closest point of the principal ice edge.
DOM: A specific domain composed of the following qualitative data values:
00: Ship in shore or flaw lead
01: Principal ice edge towards NE
02: Principal ice edge towards E
03: Principal ice edge towards SE
04: Principal ice edge towards S
05: Principal ice edge towards SW
06: Principal ice edge towards W
07: Principal ice edge towards NW
08: Principal ice edge towards N
09: Not determined (ship in ice)
10: Unable to report, because of darkness, lack of visibility or because only ice of land origin is visible
99: Missing

COM: 1. If more than one ice edge can be stated, the nearest or most important shall be reported
2. The bearing shall refer to the true and not to the magnetic north

FLD LEN: 3
WATER-SURFACE-ICE-OBSERVATION uniform concentration rate
The percent concentration (surface coverage) of ice on the water surface.
MIN: 000 MAX: 100 UNITS: percent
DOM: A general domain comprised of the ASCII characters 0-9.
999 = Missing

FLD LEN: 2
WATER-SURFACE-ICE-OBSERVATION non-uniform concentration code
The code that denotes the coverage arrangement of non-uniformly distributed ice.
DOM: A specific domain comprised of the characters in the ASCII character set.
06: Strips and patches of pack ice with open water between
07: Strips and patches of close or very close pack ice with areas of lesser concentration between
08: Fast ice with open water, very open or open pack ice to seaward of the ice boundary
09: Fast ice with close or very close pack ice to seaward of the ice boundary
99: Unable to report, because of darkness, lack of visibility, or because ship is more than 0.5 nautical mile away from ice edge

FLD LEN: 1
WATER-SURFACE-ICE-OBSERVATION ship relative position code
The code that denotes the relative position of the reporting ship to the ice formation.
DOM: A specific domain comprised of the ASCII characters
0: Ship in open water with floating ice in sight
1: In open lead or fast ice
2: In ice or within 0.5 nautical miles of ice edge
9: Missing

FLD LEN: 1
WATER-SURFACE-ICE-OBSERVATION ship penetrability code
The code that denotes the degree of ease with which the reporting ship can proceed through the ice.
DOM: A specific domain comprised of the ASCII characters.
1: Easy
2: Difficult
3: Beset (Surrounded so closely by sea ice that steering control is lost.)
9: Missing

FLD LEN: 1
WATER-SURFACE-ICE-OBSERVATION ice trend code
The code that denotes the trend of ice conditions.
DOM: A specific domain comprised of the ASCII characters.
1: Conditions improving
2: Conditions static
3: Conditions worsening
4: Conditions worsening; ice forming and floes freezing together
5: Conditions worsening; ice under slight pressure
6: Conditions worsening; ice under moderate or severe pressure
9: Missing

FLD LEN: 2
WATER-SURFACE-ICE-OBSERVATION development code
The code that denotes the development stage of the ice.
DOM: A specific domain comprised of the ASCII characters
00: New ice only (frazil ice, grease ice, slush, slugs)
01: Nilas or ice rind, less than 10 cm thick
02: Young ice (grey ice, grey-white ice), 10 - 30 cm thick
03: Predominantly new and/or young ice with some first year ice
04: Predominantly thin first year ice with some new and/or young ice
05: All thin first year ice (30 - 70 cm thick)
06: Predominantly medium first year ice (70 - 120 cm thick) and thick first year ice (> 120 cm thick) with some thinner (younger) first year ice
07: All medium and thick first year ice
08: Predominantly medium and thick first year ice with some old ice (usually more than 2 m thick)
09: Predominantly old ice
99: Unable to report, because of darkness, lack of visibility or because only ice of land origin is visible or because ship is more than .5 NM away from ice

FLD LEN: 1
WATER-SURFACE-ICE-OBSERVATION growler-bergy-bit presence code
The code that denotes the existence of growler and/or bergy bits.
DOM: A specific domain comprised of the ASCII characters
0: Not present
1: Present
2: Unknown

FLD LEN: 3
WATER-SURFACE-ICE-OBSERVATION growler-bergy-bit quantity
The quantity of growler and bergy bits observed in the area.
MIN: 000 MAX: 998
DOM: A general domain comprised of the ASCII characters 0-9.
999 = Missing

FLD LEN: 3
WATER-SURFACE-ICE-OBSERVATION iceberg quantity
The quantity of icebergs observed in the area.
MIN: 000 MAX: 998
DOM: A general domain comprised of the ASCII characters 0-9.
999 = Missing

****

Remarks Data Section

****

FLD LEN 3

GEOPHYSICAL-POINT-OBSERVATION remarks identifier
The identifier that denotes the beginning of the remarks data section.
DOM: A specific domain comprised of the ASCII character set.
REM = Remarks Data Section

FLD LEN: 3

GEOPHYSICAL-POINT-OBSERVATION remark identifier
An indicator of the type of surface remarks data contained in the GEOPHYSICAL-POINT-OBSERVATION-REMARK text
DOM: A specific domain composed of the following qualitative data values.
Domain Value ID: Domain Value Definition Text
SYN: Synoptic Remarks
AWY: Airways Remarks
MET: METAR Remarks
Indicate the occurrence of the following data items:
GEOPHYSICAL-POINT-OBSERVATION remark length quantity
GEOPHYSICAL-POINT-OBSERVATION remark text

FLD LEN: 3

GEOPHYSICAL-POINT-OBSERVATION remark length quantity
A quantity that indicates the length of a individual GEOPHYSICAL-POINT-OBSERVATION-REMARK text.
MIN: 001 MAX: 250
DOM: A general domain composed of the ASCII characters (0-9).

FLD LEN: 250

GEOPHYSICAL-POINT-OBSERVATION remark text
The text of a GEOPHYSICAL-POINT-OBSERVATION-REMARK.
DOM: A general domain comprised of the characters in the ASCII character set.

****

Element Quality Data Section

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FLD LEN: 3

GEOPHYSICAL-POINT-OBSERVATION quality data identifier
The identifier that denotes the beginning of the element quality data section.
DOM: A specific domain comprised of the ASCII character set.
EQD = Element Quality Data

FLD LEN: 3

ORIGINAL-OBSERVATION-ELEMENT-QUALITY identifier
The identifier that denotes the existence of ORIGINAL-OBSERVATION-ELEMENT-QUALITY data.
DOM: A specific domain comprised of the ASCII character set.
Q01 - Q99: The following may be occur from 0 to 99 times.
ORIGINAL-OBSERVATION-ELEMENT-QUALITY original value text
ORIGINAL-OBSERVATION-ELEMENT-QUALITY reason code
ORIGINAL-OBSERVATION-ELEMENT-QUALITY parameter code

FLD LEN: 6

ORIGINAL-OBSERVATION-ELEMENT-QUALITY original value text
The original value text for elements which were rejected or recomputed during validation.
DOM: A general domain comprised of the characters in the ASCII character set

FLD LEN: 1

ORIGINAL-OBSERVATION-ELEMENT-QUALITY reason code
The code that denotes the reason an element was identified as suspect, erroneous or recomputed.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = Original value missing or corrupted
6 = Geophysical checks and consistency checks
2 = Geophysical checks (checking the validity against other parameters)
7 = Gross error checks and geophysical checks and consistency checks
1 = Gross error checks (range and/or domain check)
3 = Consistency checks (checking the validity against the same type of parameter)
4 = Gross error checks and geophysical checks
5 = Gross error checks and consistency checks

FLD LEN: 6

ORIGINAL-OBSERVATION-ELEMENT-QUALITY parameter code
The code that denotes the type of parameter that the supplemental-level-element-quality applies to.
DOM: A specific domain comprised of the characters in the ASCII character set.
Comment Text:
APC3: ATMOSPHERIC-PRESSURE-CHANGE THREE HOUR CHANGE QUANTITY
ATOLD: AIR-TEMPERATURE-OBSERVATION-LEVEL DEWPOINT TEMPERATURE
WOSPD: WIND-OBSERVATION SPEED RATE
WOLSPD: WIND-OBSERVATION-LEVEL SPEED RATE
WOLDIR: WIND-OBSERVATION-LEVEL DIRECTION ANGLE
WODIR: WIND-OBSERVATION DIRECTION ANGLE
ATOLDS: AIR-TEMPERATURE-OBSERVATION-LEVEL DENSITY RATE
ATOLT: AIR-TEMPERATURE-OBSERVATION-LEVEL AIR TEMPERATURE
ATOD: AIR-TEMPERATURE-OBSERVATION DEW POINT TEMPERATURE
ATOT: AIR-TEMPERATURE-OBSERVATION AIR TEMPERATURE
APOSP: ATMOSPHERIC-PRESSURE-OBSERVATION STATION PRESSURE RATE
APOSLP: ATMOSPHERIC-PRESSURE-OBSERVATION SEA LEVEL PRESSURE
APOLP: ATMOSPHERIC-PRESSURE-OBSERVATION-LEVEL PRESSURE RATE
APOLH: ATMOSPHERIC-PRESSURE-OBSERVATION-LEVEL HEIGHT DIMENSION
APOA: ATMOSPHERIC-PRESSURE-OBSERVATION ALTIMETER RATE
WGOSPD: WIND-GUST-OBSERVATION SPEED RATE
APCQ24: ATMOSPHERIC-PRESSURE-CHANGE TWENTY FOUR HOUR QUANTITY
APCTEN: ATMOSPHERIC-PRESSURE-CHANGE TENDENCY CODE
PRSWOA: PRESENT-WEATHER-OBSERVATION AUTOMATED ATMOSPHERIC CONDITION CODE

PRSWM1: PRESENT-WEATHER-OBSERVATION MANUAL ATMOSPHERIC CONDITION CODE
PRSWM2: PRESENT-WEATHER-OBSERVATION MANUAL ATMOSPHERIC CONDITION CODE
PRSWM3: PRESENT-WEATHER-OBSERVATION MANUAL ATMOSPHERIC CONDITION CODE
PRSWM4: PRESENT-WEATHER-OBSERVATION MANUAL ATMOSPHERIC CONDITION CODE
PRSWM5: PRESENT-WEATHER-OBSERVATION MANUAL ATMOSPHERIC CONDITION CODE
PRSWM6: PRESENT-WEATHER-OBSERVATION MANUAL ATMOSPHERIC CONDITION CODE
PRSWM7: PRESENT-WEATHER-OBSERVATION MANUAL ATMOSPHERIC CONDITION CODE
PSTWA1: PAST-WEATHER-OBSERVATION AUTOMATED ATMOSPHERIC CONDITION CODE
PSTWA2: PAST-WEATHER-OBSERVATION AUTOMATED ATMOSPHERIC CONDITION CODE
PSTWM1: PAST-WEATHER-OBSERVATION MANUAL ATMOSPHERIC CONDITION CODE
PSTWM2: PAST-WEATHER-OBSERVATION MANUAL ATMOSPHERIC CONDITION CODE
PSTWOP: PAST-WEATHER-OBSERVATION PERIOD QUANTITY
SCOCIG: SKY-CONDITION-OBSERVATION CEILING HEIGHT DIMENSION
SCOHCG: SKY-CONDITION-OBSERVATION HIGH CLOUD GENUS CODE
SCOLCB: SKY-CONDITION-OBSERVATION LOWEST CLOUD BASE HEIGHT DIMENSION
SCOLCG: SKY-CONDITION-OBSERVATION LOW CLOUD GENUS CODE
SCOMCG: SKY-CONDITION-OBSERVATION MID CLOUD GENUS CODE
SCOTCV: SKY-CONDITION-OBSERVATION TOTAL COVERAGE CODE
SCOTLC: SKY-CONDITION-OBSERVATION TOTAL LOWEST CLOUD COVER CODE
VODIS: VISIBILITY-OBSERVATION DISTANCE DIMENSION
VOVAR: VISIBILITY-OBSERVATION VARIABILITY CODE

7. **Start Date:**

Currently the 1920's, but the date will vary by station.

8. **Stop Date:** Present

9. **Coverage:**

a. Southernmost Latitude: 9000S
b. Northernmost Latitude: 9000N
c. Westernmost Longitude: 18000W
d. Easternmost Longitude: 18000E

10. **Location:** Global

11. **Keywords:**

a. Temperature
b. Dew Point
c. Wind Speed
d. Wind Gust
e. Wind Direction
f. Ceiling
g. Sky Cover
h. Cloud Layer Data
i. Visibility
j. Present Weather
k. Past Weather
l. Sea Level Pressure
m. Altimeter Setting
n. Station Pressure
o. 3-hour Pressure Change
p. Precipitation Amount
q. Snowfall
r. Snow Depth
s. Maximum Temperature
t. Minimum Temperature
u. US Air Force
v. Clouds
w. Surface

12. **How to Order Data:**

Order from:
National Climatic Data Center
Climate Services Branch
Federal Building
151 Patton Avenue
Asheville, NC 28801-5001
phone: (828) 271-4800
email: orders@ncdc.noaa.gov

13. **Archiving Data Center:**

Air Force Combat Climatology Center (AFCCC)
Federal Building
151 Patton Avenue
Asheville, NC 28801-5001

14. **Technical Contact:**

National Climatic Data Center
Climate Services Branch
Federal Building
151 Patton Avenue
Asheville, NC 28801-5001
phone: (828) 271-4800
email: questions@ncdc.noaa.gov

15. **Known Uncorrected Problems:**

Minimal number of random errors, decode errors, and reporting errors (by station)--less than .1% of observations affected overall. Most errors corrected/eliminated by quality control software.

16. **Quality Statement:**

Data have undergone extensive automated quality control, and additional manual quality control for US Air Force stations.

17. **Revision Date:**

March 17, 1999 - correct block length

18. **Source Data Sets:**

DATSAV2

19. **Essential Companion Data Sets:**

20. **Derived Data Sets:** Global summary of day for 1994-1999

21. **References:**

22. **Summary:**

The DATSAV3 database is composed of worldwide surface weather observations from about 10,000 currently active stations, collected and stored from sources such as the Automated Weather Network (AWN) and the Global Telecommunications System (GTS). Most collected observations are decoded at the Air Force Global Weather Central (AFGWC) at Offutt AFB, Nebraska, and then sent electronically to the USAF Combat Climatology Center (AFCCC), collocated with NCDC in the Federal Climate Complex in Asheville, NC. AFCCC builds the final database through decode, validation, and quality control software. All data are stored in a single ASCII format. The database is used in climatological applications by numerous DoD and civilian customers.

DATSAV3 refers to the digital tape format in which decoded weather observations are stored. The DATSAV3 format conforms to Federal Information Processing Standards (FIPS). The DATSAV3 database includes data originating from various codes such as synoptic, airways, METAR (Meteorological Routine Weather Report), and SMARS (Supplementary Marine Reporting Station), as well as observations from automatic weather stations. The users handbook provides

complete documentation for the database and its format.

AFCCC sorts the observations into station-date-time order, validates each station number against the Air Weather Service Master Station Catalog (AWSMSC), runs several quality control programs, and then merges and sorts the data further into monthly and yearly station-ordered files. AFCCC then provides the data to the collocated National Climatic Data Center (NCDC).