

FEDERAL CLIMATE COMPLEX

DATA DOCUMENTATION

FOR

INTEGRATED SURFACE DATA

November 7, 2012

National Climatic Data Center
Air Force Combat Climatology Center
Fleet Numerical Meteorology and Oceanography Detachment
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Important notice: In order to accommodate a growing number of stations in the Integrated Surface Data (ISD), a new methodology for the assignment of station identifiers is being implemented by approximately January 2013. Station identifiers which currently appear as an 11-digit numerical field in positions 5 - 15 of each ISD record in the archive format described in this document will soon include stations that contain an alphabetic character (A-Z) for the leading digit (position 5). These assignments will not affect existing stations unless it becomes necessary to reassign new identifiers to them. This is occasionally necessary due to station moves or various other reasons. It will affect most new stations coming into existence after this implementation occurs. At some point in the future, NCDC will be moving toward a longer station identifier for ISD. This will extend the current record layout of the data files and also influence all existing station identifiers which will be reassigned. NCDC will provide further information on these pending changes as the details are established. You may also keep abreast of these or other changes by referring to the most recent edition of the ISD documentation.

1. **Data Set ID:**

DS3505

2. **Data Set Name:**

INTEGRATED SURFACE DATA (ISD)

3. **Data Set Aliases:**

N/A

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

The data files are derived from surface observational data, and are stored in ASCII character format. Data field definitions for elements transmitted are provided after this preface, providing definition of data fields, position number for mandatory data fields, field lengths for variable data fields, minimum/maximum values of transmitted data, and values for missing data fields. Data are accessible via NCDC's Climate Data Online system (cdo.ncdc.noaa.gov), FTP (<ftp://ftp.ncdc.noaa.gov/pub/data/noaa/>), GIS services (gis.ncdc.noaa.gov), and by calling NCDC for off-line servicing (see section 12 below).

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 element quality data sections.

Maximum record size: 2,844 characters

Maximum block length: 8,192 characters for data provided on tape

Control Data Section - The beginning of each record provides information about the report including date, time, and station location information. Data fields will be in positions identified in the applicable data definition. The control data section is fixed length and is 60 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 length data are provided after the mandatory data. These additional data contain information of significance and/or which are received with varying degrees of frequency. Identifiers are used to note when data are present in the record. If all data fields in a group are missing, the entire group is usually 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 - The numeric and character (plain language) remarks are provided if they exist. The data will vary in length and are identified in the applicable data 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 have been determined erroneous or suspect during quality control procedures. Also, some of the original data source codes and flags are stored here. 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 are filled (i.e., 999). Missing values for any signed item are 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 often 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:** See documentation below.

Control Data Section

POS: 1-4

TOTAL-VARIABLE-CHARACTERS (this includes remarks, additional data, and element quality section)
The number of characters in the variable data section. The total record length = 105 + the value stored in this field.
DOM: A general domain comprised of the characters in the ASCII character set.
MIN: 0000 MAX: 9999

POS: 5-10

FIXED-WEATHER-STATION USAF MASTER STATION CATALOG identifier
The identifier that represents a FIXED-WEATHER-STATION.
DOM: A general domain comprised of the characters in the ASCII character set.
COMMENT: This field includes all surface reporting stations, including ships, buoys, etc.

POS: 11-15

FIXED-WEATHER-STATION NCDC WBAN identifier
The identifier that represents a FIXED-WEATHER-STATION.
MIN: 00000 MAX: 99999
DOM: A general domain comprised of the numeric characters (0-9).
COMMENT: This field includes all surface reporting stations, including ships, buoys, etc.

NOTE:

1) For data files obtained via FTP or from NCDC's archive, the filename convention uses the USAF identifier and the WBAN identifier in the filename—eg, 723150-03812-year (such as 2006).

2) As additional data sources are integrated into ISD, the 2 station number fields will be used as an 11-digit ID field, with the first 2 digits representing the WMO block number (if applicable).

POS: 16-23

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: 24-27

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: 28-28

GEOPHYSICAL-POINT-OBSERVATION data source flag
The flag of a GEOPHYSICAL-POINT-OBSERVATION showing the source or combination of sources used in creating the observation.
MIN: 1 MAX: Z
DOM: A general domain comprised of values 1-9 and A-E.
1 = USAF SURFACE HOURLY observation, candidate for merge with NCDC SURFACE HOURLY (not yet merged, failed element cross-checks)
2 = NCDC SURFACE HOURLY observation, candidate for merge with USAF SURFACE HOURLY (not yet merged, failed element cross-checks)
3 = USAF SURFACE HOURLY/NCDC SURFACE HOURLY merged observation
4 = USAF SURFACE HOURLY observation
5 = NCDC SURFACE HOURLY observation
6 = ASOS/AWOS observation from NCDC
7 = ASOS/AWOS observation merged with USAF SURFACE HOURLY observation

8 = MAPSO observation (NCDC)
 A = USAF SURFACE HOURLY/NCDC HOURLY PRECIPITATION merged observation, candidate for merge with
 NCDC SURFACE HOURLY (not yet merged, failed element cross-checks)
 B = NCDC SURFACE HOURLY/NCDC HOURLY PRECIPITATION merged observation, candidate for merge with
 USAF SURFACE HOURLY (not yet merged, failed element cross-checks)
 C = USAF SURFACE HOURLY/NCDC SURFACE HOURLY/NCDC HOURLY PRECIPITATION merged observation
 D = USAF SURFACE HOURLY/NCDC HOURLY PRECIPITATION merged observation
 E = NCDC SURFACE HOURLY/NCDC HOURLY PRECIPITATION merged observation
 F = Form OMR/1001 – Weather Bureau city office (keyed data)
 G = SAO surface airways observation, pre-1949 (keyed data)
 H = SAO surface airways observation, 1965-1981 format/period (keyed data)
 I = Climate Reference Network observation
 J = Cooperative Network observation
 K = Radiation Network observation
 L = Data from Climate Data Modernization Program (CDMP) data source
 N = NCAR / NCDC cooperative effort (various national datasets)
 9 = Missing

Note: Latitude, longitude, elevation, and call letters for some locations with data from multiple sources (see data source flag above) will sometimes vary within a data file due to differences in the metadata from the originating source. This does not indicate that the station locations differ; only that the metadata have not yet been fully reflected in the data records.

POS: 29-34

GEOPHYSICAL-POINT-OBSERVATION latitude coordinate
 The latitude coordinate of a GEOPHYSICAL-POINT-OBSERVATION where southern hemisphere is negative.
 MIN: -90000 MAX: +90000
 UNITS: Angular 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: 35-41

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: Angular 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: 42-46

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 from 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
SOD = Summary of day report from U.S. ASOS or AWOS station
SOM = Summary of month report from U.S. ASOS or AWOS station
WBO = Weather Bureau Office
COOPD = US Cooperative Network summary of day report
COOPS = US Cooperative Network soil temperature report
PCP15 = US 15-minute precipitation network report
PCP60 = US 60-minute precipitation network report
CRN05 = Climate Reference Network report, with 5-minute reporting interval
CRN15 = Climate Reference Network report, with 15-minute reporting interval
SURF = Surface Radiation Network report
BRAZ = Dataset from Brazil
GREEN = Dataset from Greenland
AUST = Dataset from Australia
MEXIC = Dataset from Mexico
CRB = Climate Reference Book data from CDMP
WNO = Washington Naval Observatory
NSRDB = National Solar Radiation Data Base
99999 = Missing

POS: 47-51

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: 52-56

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: 57-60

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.

Mandatory Data Section

Bold type below indicates that the element may include data originating from NCDC's NCDC SURFACE HOURLY/ASOS/AWOS or from AFCCC's USAF SURFACE HOURLY. Otherwise, data originated from USAF SURFACE HOURLY.

Note: For the quality code fields with each data element, the following may appear in data which were processed through NCDC's Interactive QC system (manual interaction), for selected parameters:

A – Data value flagged as suspect, but accepted as good value.

U – Data value replaced with edited value.

P – Data value not originally flagged as suspect, but replaced by validator.

I – Data value not originally in data, but inserted by validator.

M – Manual change made to value based on information provided by NWS or FAA.

C – Temperature and dew point received from Automated Weather Observing Systems (AWOS) are reported in whole degrees Celsius. Automated QC flags these values, but they are accepted as valid.

R – Data value replaced with value computed by NCDC software.

POS: 61-63

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. If type code (below) = V, then 999 indicates variable wind direction.

POS: 64-64

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 = Passed gross limits check

1 = Passed all quality control checks

2 = Suspect

3 = Erroneous

4 = Passed gross limits check, data originate from an NCDC data source

5 = Passed all quality control checks, data originate from an NCDC data source

6 = Suspect, data originate from an NCDC data source

7 = Erroneous, data originate from an NCDC data source

9 = Passed gross limits check if element is present

POS: 65-65

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.

A: Abridged Beaufort

B: Beaufort

C: Calm

H: 5-Minute Average Speed

N: Normal

R: 60-Minute Average Speed

Q: Squall

T: 180 Minute Average Speed

V: Variable

9 = Missing

NOTE: If a value of 9 appears with a wind speed of 0000, this indicates calm winds.

POS: 66-69

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: 70-70

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 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 4 = Passed gross limits check , data originate from an NCDC data source
- 5 = Passed all quality control checks, data originate from an NCDC data source
- 6 = Suspect, data originate from an NCDC data source
- 7 = Erroneous, data originate from an NCDC data source
- 9 = Passed gross limits check if element is present

POS: 71-75

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. Unlimited = 22000.

MIN: 00000 MAX: 22000 UNITS: Meters

SCALING FACTOR: 1

DOM: A general domain comprised of the numeric characters (0-9).
99999 = Missing.

POS: 76-76

SKY-CONDITION-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 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 4 = Passed gross limits check , data originate from an NCDC data source
- 5 = Passed all quality control checks, data originate from an NCDC data source
- 6 = Suspect, data originate from an NCDC data source
- 7 = Erroneous, data originate from an NCDC data source
- 9 = Passed gross limits check if element is present

POS: 77-77

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
- D: Persistent cirriform ceiling (pre-1950 data)
- E: Estimated
- M: Measured
- P: Precipitation ceiling (pre-1950 data)
- R: Radar
- S: ASOS augmented
- U: Unknown ceiling (pre-1950 data)
- V: Variable ceiling (pre-1950 data)
- W: Obscured

9: Missing

POS: 78-78

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: 79-84

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 160000 are entered as 160000

POS: 85-85

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 = Passed gross limits check

1 = Passed all quality control checks

2 = Suspect

3 = Erroneous

4 = Passed gross limits check , data originate from an NCDC data source

5 = Passed all quality control checks, data originate from an NCDC data source

6 = Suspect, data originate from an NCDC data source

7 = Erroneous, data originate from an NCDC data source

9 = Passed gross limits check if element is present

POS: 86-86

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

9 = Missing

POS: 87-87

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 = Passed gross limits check

1 = Passed all quality control checks

2 = Suspect

3 = Erroneous

4 = Passed gross limits check , data originate from an NCDC data source

5 = Passed all quality control checks, data originate from an NCDC data source

6 = Suspect, data originate from an NCDC data source

7 = Erroneous, data originate from an NCDC data source

9 = Passed gross limits check if element is present

POS: 88-92

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: 93-93

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 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 4 = Passed gross limits check , data originate from an NCDC data source
- 5 = Passed all quality control checks, data originate from an NCDC data source
- 6 = Suspect, data originate from an NCDC data source
- 7 = Erroneous, data originate from an NCDC data source
- 9 = Passed gross limits check if element is present
- A = Data value flagged as suspect, but accepted as a good value
- C = Temperature and dew point received from Automated Weather Observing System (AWOS) are reported in whole degrees Celsius. Automated QC flags these values, but they are accepted as valid.
- I = Data value not originally in data, but inserted by validator
- M = Manual changes made to value based on information provided by NWS or FAA
- P = Data value not originally flagged as suspect, but replaced by validator
- R = Data value replaced with value computed by NCDC software
- U = Data value replaced with edited value

POS: 94-98

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: 99-99

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 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 4 = Passed gross limits check , data originate from an NCDC data source
- 5 = Passed all quality control checks, data originate from an NCDC data source
- 6 = Suspect, data originate from an NCDC data source
- 7 = Erroneous, data originate from an NCDC data source
- 9 = Passed gross limits check if element is present
- A = Data value flagged as suspect, but accepted as a good value
- C = Temperature and dew point received from Automated Weather Observing System (AWOS) are reported in whole degrees Celsius. Automated QC flags these values, but they are accepted as valid.
- I = Data value not originally in data, but inserted by validator
- M = Manual changes made to value based on information provided by NWS or FAA
- P = Data value not originally flagged as suspect, but replaced by validator
- R = Data value replaced with value computed by NCDC software
- U = Data value replaced with edited value

POS: 100-104

ATMOSPHERIC-PRESSURE-OBSERVATION sea level pressure

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: 105-105

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 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 4 = Passed gross limits check , data originate from an NCDC data source
- 5 = Passed all quality control checks, data originate from an NCDC data source
- 6 = Suspect, data originate from an NCDC data source
- 7 = Erroneous, data originate from an NCDC data source
- 9 = Passed gross limits check if element is present

Additional Data Section

Bold type below indicates that the element may include data originating from NCDC's NCDC SURFACE HOURLY/ASOS/AWOS, NCDC HOURLY PRECIPITATION/Hourly Precip, or from AFCC's USAF SURFACE HOURLY. Otherwise, data originated from USAF SURFACE HOURLY.

Note: For the quality code fields with each data element, the following may appear in data which were processed through NCDC's Interactive QC system (manual interaction), for selected parameters:

A – Data value flagged as suspect, but accepted as good value.

U – Data value replaced with edited value.

P – Data value not originally flagged as suspect, but replaced by validator.

I – Data value not originally in data, but inserted by validator.

M - Manual change made to value based on information provided by NWS or FAA

C - Temperature and dew point received from Automated Weather Observing Systems (AWOS) are reported in whole degrees Celsius. Automated QC flags these values, but they are accepted as valid.

R - Data value replaced with value computed by NCDC software.

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

Precipitation Data

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 condition code
LIQUID-PRECIPITATION quality code

FLD LEN: 2

LIQUID-PRECIPITATION period quantity in hours
The quantity of time over which the LIQUID-PRECIPITATION was measured.
MIN: 00 MAX: 98 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
- 3: Begin accumulated period (precipitation amount missing until end of accumulated period)
- 4: End accumulated period
- 5: Begin deleted period (precipitation amount missing due to data problem)
- 6: End deleted period
- 7: Begin missing period
- 8: End missing period
- E: Estimated data value (eg, from nearby station)
- I: Incomplete precipitation amount, excludes one or more missing reports, such as one or more 15-minute reports not included in the 1-hour precipitation total
- J: Incomplete precipitation amount, excludes one or more erroneous reports, such as one or more 1-hour precipitation amounts excluded from the 24-hour total
- 9: Missing

FLD LEN: 1

LIQUID-PRECIPITATION quality code

The code that denotes a quality status of the reported LIQUID-PRECIPITATION data.

DOM: A specific domain comprised of the characters in the ASCII character set.

- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 4 = Passed gross limits check , data originate from an NCDC data source
- 5 = Passed all quality control checks, data originate from an NCDC data source
- 6 = Suspect, data originate from an NCDC data source
- 7 = Erroneous, data originate from an NCDC data source
- 9 = Passed gross limits check if element is present

FLD LEN: 3

LIQUID-PRECIPITATION MONTHLY TOTAL identifier

The identifier that represents LIQUID-PRECIPITATION MONTHLY TOTAL data.

DOM: A specific domain comprised of the characters in the ASCII character set.

- AB1** An indicator of the following items:
- LIQUID-PRECIPITATION depth dimension
 - LIQUID-PRECIPITATION condition code
 - LIQUID-PRECIPITATION quality code

FLD LEN: 5

LIQUID-PRECIPITATION MONTHLY TOTAL depth dimension

The depth of LIQUID-PRECIPITATION for the month.

MIN: 00000 MAX: 50000 UNITS: millimeters

SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters (0-9).
99999 = Missing.

FLD LEN: 1

LIQUID-PRECIPITATION MONTHLY TOTAL 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: 1

LIQUID-PRECIPITATION MONTHLY TOTAL quality code

The code that denotes a quality status of the reported LIQUID-PRECIPITATION data.

DOM: A specific domain comprised of the characters in the ASCII character set.

- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect

- 3 = Erroneous
- 4 = Passed gross limits check, data originate from an NCDC data source
- 5 = Passed all quality control checks, data originate from an NCDC data source
- 6 = Suspect, data originate from an NCDC data source
- 7 = Erroneous, data originate from an NCDC data source
- 9 = Passed gross limits check if element is present

FLD LEN: 3

PRECIPITATION-OBSERVATION-HISTORY identifier

The identifier that indicates the occurrence of precipitation history information.

DOM: A specific domain comprised of the characters in the ASCII character set.

AC1 An indicator of the following items:

- PRECIPITATION-OBSERVATION-HISTORY duration code
- PRECIPITATION-OBSERVATION-HISTORY characteristic code
- PRECIPITATION-OBSERVATION-HISTORY quality 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: 1

PRECIPITATION duration/characteristic quality code

The code that denotes a quality status of the reported PRECIPITATION duration/characteristic.

DOM: A specific domain comprised of the characters in the ASCII character set.

- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 9 = Passed gross limits check if element is present

FLD LEN: 3

LIQUID-PRECIPITATION GREATEST AMOUNT IN 24 HOURS, FOR THE MONTH identifier

The identifier that represents LIQUID-PRECIPITATION, GREATEST IN 24 HOURS, data.

DOM: A specific domain comprised of the characters in the ASCII character set.

AD1 An indicator of the following items:

- LIQUID-PRECIPITATION depth dimension
- LIQUID-PRECIPITATION condition code
- LIQUID-PRECIPITATION dates of occurrence (3 fields)
- LIQUID-PRECIPITATION quality code

FLD LEN: 5

LIQUID-PRECIPITATION GREATEST AMOUNT IN 24 HOURS, FOR THE MONTH depth dimension

The depth of LIQUID-PRECIPITATION for the 24-hour period.

MIN: 00000 MAX: 20000 UNITS: millimeters

SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters (0-9).
99999 = Missing.

FLD LEN: 1

LIQUID-PRECIPITATION GREATEST AMOUNT IN 24 HOURS, FOR THE MONTH 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
- 3: The amount occurred on other dates in addition to those listed
- 4: Trace amount occurred on other dates in addition to those listed
- 9: Missing

FLD LEN: 4

LIQUID-PRECIPITATION GREATEST AMOUNT IN 24 HOURS, FOR THE MONTH dates of occurrence

The dates of occurrence of LIQUID-PRECIPITATION, given as the begin-end date for the 24-hour period, for up to 3 occurrences; e.g., 0405 indicates 24-hour period on days 04-05.

MIN: 0101 MAX: 3131

DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing.

FLD LEN: 4

LIQUID-PRECIPITATION GREATEST AMOUNT IN 24 HOURS, FOR THE MONTH dates of occurrence

The dates of occurrence of LIQUID-PRECIPITATION, given as the begin-end date for the 24-hour period, for up to 3 occurrences; e.g., 0405 indicates 24-hour period on days 04-05.

MIN: 0101 MAX: 3131

DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing.

FLD LEN: 4

LIQUID-PRECIPITATION GREATEST AMOUNT IN 24 HOURS, FOR THE MONTH dates of occurrence

The dates of occurrence of LIQUID-PRECIPITATION, given as the begin-end date for the 24-hour period, for up to 3 occurrences; e.g., 0405 indicates 24-hour period on days 04-05.

MIN: 0101 MAX: 3131

DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing.

FLD LEN: 1

LIQUID-PRECIPITATION GREATEST AMOUNT IN 24 HOURS, FOR THE MONTH quality code

The code that denotes a quality status of the reported LIQUID-PRECIPITATION data.

DOM: A specific domain comprised of the characters in the ASCII character set.

- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 4 = Passed gross limits check , data originate from an NCDC data source
- 5 = Passed all quality control checks, data originate from an NCDC data source
- 6 = Suspect, data originate from an NCDC data source
- 7 = Erroneous, data originate from an NCDC data source
- 9 = Passed gross limits check if element is present

FLD LEN: 3

LIQUID-PRECIPITATION, NUMBER OF DAYS WITH SPECIFIC AMOUNTS, FOR THE MONTH identifier

The identifier that represents NUMBER OF DAYS WITH LIQUID-PRECIPITATION data.

DOM: A specific domain comprised of the characters in the ASCII character set.

AE1 An indicator of the following items:

- LIQUID-PRECIPITATION number of days with .01 inch or more
- LIQUID-PRECIPITATION quality code
- LIQUID-PRECIPITATION number of days with .10 inch or more
- LIQUID-PRECIPITATION quality code
- LIQUID-PRECIPITATION number of days with .50 inch or more

LIQUID-PRECIPIATION quality code
LIQUID-PRECIPIATION number of days with 1.00 inch or more
LIQUID-PRECIPIATION quality code

FLD LEN: 2

LIQUID-PRECIPIATION, NUMBER OF DAYS WITH SPECIFIC AMOUNTS, FOR THE MONTH

The number of days with .01 inch (.25 mm) or more precipitation.

MIN: 00 MAX: 31

DOM: A general domain comprised of the numeric characters (0-9).
99 = Missing.

FLD LEN: 1

LIQUID-PRECIPIATION, NUMBER OF DAYS WITH SPECIFIC AMOUNTS, FOR THE MONTH quality code

The code that denotes a quality status of the reported days with .01 or more.

DOM: A specific domain comprised of the characters in the ASCII character set.

- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 4 = Passed gross limits check , data originate from an NCDC data source
- 5 = Passed all quality control checks, data originate from an NCDC data source
- 6 = Suspect, data originate from an NCDC data source
- 7 = Erroneous, data originate from an NCDC data source
- 9 = Passed gross limits check if element is present

FLD LEN: 2

LIQUID-PRECIPIATION, NUMBER OF DAYS WITH SPECIFIC AMOUNTS, FOR THE MONTH

The number of days with .10 inch (2.5 mm) or more precipitation.

MIN: 00 MAX: 31

DOM: A general domain comprised of the numeric characters (0-9).
99 = Missing.

FLD LEN: 1

LIQUID-PRECIPIATION, NUMBER OF DAYS WITH SPECIFIC AMOUNTS, FOR THE MONTH quality code

The code that denotes a quality status of the reported days with .10 or more.

DOM: A specific domain comprised of the characters in the ASCII character set.

- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 4 = Passed gross limits check , data originate from an NCDC data source
- 5 = Passed all quality control checks, data originate from an NCDC data source
- 6 = Suspect, data originate from an NCDC data source
- 7 = Erroneous, data originate from an NCDC data source
- 9 = Passed gross limits check if element is present

FLD LEN: 2

LIQUID-PRECIPIATION, NUMBER OF DAYS WITH SPECIFIC AMOUNTS, FOR THE MONTH

The number of days with .50 inch (12.7 mm) or more precipitation.

MIN: 00 MAX: 31

DOM: A general domain comprised of the numeric characters (0-9).
99 = Missing.

FLD LEN: 1

LIQUID-PRECIPIATION, NUMBER OF DAYS WITH SPECIFIC AMOUNTS, FOR THE MONTH quality code

The code that denotes a quality status of the reported days with .50 or more.

DOM: A specific domain comprised of the characters in the ASCII character set.

- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 4 = Passed gross limits check , data originate from an NCDC data source
- 5 = Passed all quality control checks, data originate from an NCDC data source

- 6 = Suspect, data originate from an NCDC data source
- 7 = Erroneous, data originate from an NCDC data source
- 9 = Passed gross limits check if element is present

FLD LEN: 2

LIQUID-PRECIPITATION, NUMBER OF DAYS WITH SPECIFIC AMOUNTS, FOR THE MONTH

The number of days with 1.00 inch (25 mm) or more precipitation.

MIN: 00 MAX: 31

DOM: A general domain comprised of the numeric characters (0-9).
99 = Missing.

FLD LEN: 1

LIQUID-PRECIPITATION, NUMBER OF DAYS WITH SPECIFIC AMOUNTS, FOR THE MONTH quality code

The code that denotes a quality status of the reported days with 1.00 or more.

DOM: A specific domain comprised of the characters in the ASCII character set.

- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 4 = Passed gross limits check , data originate from an NCDC data source
- 5 = Passed all quality control checks, data originate from an NCDC data source
- 6 = Suspect, data originate from an NCDC data source
- 7 = Erroneous, data originate from an NCDC data source
- 9 = Passed gross limits check if element is present

FLD LEN: 3

PRECIPITATION-ESTIMATED-OBSERVATION identifier

The identifier that represents a PRECIPITATION-ESTIMATED-OBSERVATION, from AFCCC.

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 depth dimension

FLD LEN: 1

PRECIPITATION-ESTIMATED-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-ESTIMATED-OBSERVATION estimated water depth dimension

The estimated depth of precipitation in water depth 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.

FLD LEN: 3

LIQUID-PRECIPITATION MAXIMUM SHORT DURATION, FOR THE MONTH identifier

The identifier that represents MAXIMUM SHORT DURATION PRECIPITATION data.

DOM: A specific domain comprised of the characters in the ASCII character set.

AH1-AH6: An indicator of up to 6 repeating fields for the following items:
LIQUID-PRECIPIATION period quantity
LIQUID-PRECIPIATION depth dimension
LIQUID-PRECIPIATION condition code
LIQUID-PRECIPIATION end date
LIQUID-PRECIPIATION end time
LIQUID-PRECIPIATION quality code

FLD LEN: 3

LIQUID-PRECIPIATION MAXIMUM SHORT DURATION, FOR THE MONTH period quantity
The quantity of time over which the LIQUID-PRECIPIATION was measured.
MIN: 005 MAX: 180 UNITS: Minutes
SCALING FACTOR: 1
DOM: A specific domain comprised of the characters in the ASCII character set
999 = Missing.

FLD LEN: 4

LIQUID-PRECIPIATION MAXIMUM SHORT DURATION, FOR THE MONTH depth dimension
The depth of LIQUID-PRECIPIATION for the defined time period.
MIN: 0000 MAX: 3000 UNITS: millimeters
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing.

FLD LEN: 1

LIQUID-PRECIPIATION MAXIMUM SHORT DURATION, FOR THE MONTH condition code
The code that denotes whether a LIQUID-PRECIPIATION 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: 6

LIQUID-PRECIPIATION MAXIMUM SHORT DURATION, FOR THE MONTH ending date-time
The ending date of occurrence of the event , given as the date-time in GMT; e.g., 051010 indicates 1010 Z-time on day 05 of the month.
MIN: 010000 MAX: 312359
DOM: A general domain comprised of the numeric characters (0-9).
999999 = Missing.

FLD LEN: 1

LIQUID-PRECIPIATION MAXIMUM SHORT DURATION, FOR THE MONTH quality code
The code that denotes a quality status of the reported LIQUID-PRECIPIATION data.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
4 = Passed gross limits check , data originate from an NCDC data source
5 = Passed all quality control checks, data originate from an NCDC data source
6 = Suspect, data originate from an NCDC data source
7 = Erroneous, data originate from an NCDC data source
9 = Passed gross limits check if element is present

FLD LEN: 3

LIQUID-PRECIPIATION MAXIMUM SHORT DURATION, FOR THE MONTH identifier
The identifier that represents MAXIMUM SHORT DURATION PRECIPITATION data.
DOM: A specific domain comprised of the characters in the ASCII character set.
NOTE: This data group is identical to the AH1-6 group above, for the purpose of allowing up to 12 occurrences of these reports.
A11-A16: An indicator of up to 6 repeating fields for the following items:

LIQUID-PRECIPITATION period quantity
LIQUID-PRECIPITATION depth dimension
LIQUID-PRECIPITATION condition code
LIQUID-PRECIPITATION end date
LIQUID-PRECIPITATION end time
LIQUID-PRECIPITATION quality code

FLD LEN: 3

LIQUID-PRECIPITATION MAXIMUM SHORT DURATION, FOR THE MONTH period quantity

The quantity of time over which the LIQUID-PRECIPITATION was measured.

MIN: 060 MAX: 180 UNITS: Minutes

SCALING FACTOR: 1

DOM: A specific domain comprised of the characters in the ASCII character set
999 = Missing.

FLD LEN: 4

LIQUID-PRECIPITATION MAXIMUM SHORT DURATION, FOR THE MONTH depth dimension

The depth of LIQUID-PRECIPITATION for the defined time period.

MIN: 0000 MAX: 3000 UNITS: millimeters

SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing.

FLD LEN: 1

LIQUID-PRECIPITATION MAXIMUM SHORT DURATION, FOR THE MONTH 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: 6

LIQUID-PRECIPITATION MAXIMUM SHORT DURATION, FOR THE MONTH ending date-time

The ending date of occurrence of the event , given as the date-time in GMT; e.g., 051010 indicates 1010 Z-time on day 05 of the month.

MIN: 010000 MAX: 312359

DOM: A general domain comprised of the numeric characters (0-9).
999999 = Missing.

FLD LEN: 1

LIQUID-PRECIPITATION MAXIMUM SHORT DURATION, FOR THE MONTH quality code

The code that denotes a quality status of the reported LIQUID-PRECIPITATION data.

DOM: A specific domain comprised of the characters in the ASCII character set.

0 = Passed gross limits check

1 = Passed all quality control checks

2 = Suspect

3 = Erroneous

4 = Passed gross limits check , data originate from an NCDC data source

5 = Passed all quality control checks, data originate from an NCDC data source

6 = Suspect, data originate from an NCDC data source

7 = Erroneous, data originate from an NCDC data source

9 = Passed gross limits check if element is present

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 quality code
SNOW-DEPTH equivalent water depth dimension
SNOW-DEPTH equivalent water condition code
SNOW-DEPTH equivalent water condition quality 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
4: End accumulated period (data include more than one day)
5: End deleted period (data eliminated due to quality problems)
6: End missing period
E: Estimated data value (eg, from nearby station)
9: Missing

FLD LEN: 1

SNOW-DEPTH quality code
The code that denotes a quality status of the reported SNOW-DEPTH data.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
4 = Passed gross limits check , data originate from an NCDC data source
5 = Passed all quality control checks, data originate from an NCDC data source
6 = Suspect, data originate from an NCDC data source
7 = Erroneous, data originate from an NCDC data source
9 = Passed gross limits check if element is present

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 (no special code to report)

FLD LEN: 1

SNOW-DEPTH equivalent water condition quality code
The code that denotes a quality status of the reported SNOW-DEPTH equivalent water condition.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect

- 3 = Erroneous
 - 4 = Passed gross limits check , data originate from an NCDC data source
 - 5 = Passed all quality control checks, data originate from an NCDC data source
 - 6 = Suspect, data originate from an NCDC data source
 - 7 = Erroneous, data originate from an NCDC data source
 - 9 = Passed gross limits check if element is present
-

FLD LEN: 3

SNOW-DEPTH GREATEST DEPTH ON THE GROUND, FOR THE MONTH identifier

The identifier that represents SNOW-DEPTH GREATEST SNOW DEPTH ON THE GROUND, data.

DOM: A specific domain comprised of the characters in the ASCII character set.

AK1 An indicator of the following items:

- SNOW-DEPTH depth dimension
- SNOW-DEPTH condition code
- SNOW-DEPTH dates of occurrence
- SNOW-DEPTH quality code

FLD LEN: 4

SNOW-DEPTH GREATEST DEPTH ON THE GROUND, FOR THE MONTH depth dimension

The depth of GREATEST SNOW DEPTH FOR THE MONTH.

MIN: 0000 MAX: 1500 UNITS: centimeters

SCALING FACTOR: 1

DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing.

FLD LEN: 1

SNOW-DEPTH GREATEST DEPTH ON THE GROUND, FOR THE MONTH condition code

The code that denotes whether a SNOW-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
- 3: The amount occurred on other dates in addition to those listed
- 4: Trace amount occurred on other dates in addition to those listed
- 9: Missing

FLD LEN: 6

SNOW-DEPTH GREATEST DEPTH ON THE GROUND, FOR THE MONTH dates of occurrence

The dates of occurrence of SNOW-DEPTH, given as the date for each occurrence, for up to 3 occurrences; e.g., 041016 indicates days 04, 10, and 16.

MIN: 01 MAX: 31

DOM: A general domain comprised of the numeric characters (0-9).
99 = missing for each of the 3 sub-fields.

FLD LEN: 1

SNOW-DEPTH GREATEST DEPTH ON THE GROUND, FOR THE MONTH quality code

The code that denotes a quality status of the reported SNOW-DEPTH data.

DOM: A specific domain comprised of the characters in the ASCII character set.

- 0 = Passed gross limits check
 - 1 = Passed all quality control checks
 - 2 = Suspect
 - 3 = Erroneous
 - 4 = Passed gross limits check , data originate from an NCDC data source
 - 5 = Passed all quality control checks, data originate from an NCDC data source
 - 6 = Suspect, data originate from an NCDC data source
 - 7 = Erroneous, data originate from an NCDC data source
 - 9 = Passed gross limits check if element is present
-

FLD LEN: 3

SNOW-ACCUMULATION occurrence identifier

The identifier 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 period quantity
SNOW-ACCUMULATION depth dimension
SNOW-ACCUMULATION condition code
SNOW-ACCUMULATION quality code

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
4: End accumulated period (data include more than one day)
5: End deleted period (data eliminated due to quality problems)
6: End missing period
E: Estimated data value (eg, from nearby station)
9: Missing

FLD LEN: 1
SNOW-ACCUMULATION quality code
The code that denotes a quality status of the reported SNOW-ACCUMULATION.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
4 = Passed gross limits check , data originate from an NCDC data source
5 = Passed all quality control checks, data originate from an NCDC data source
6 = Suspect, data originate from an NCDC data source
7 = Erroneous, data originate from an NCDC data source
9 = Passed gross limits check if element is present

FLD LEN: 3
SNOW-ACCUMULATION GREATEST AMOUNT IN 24 HOURS, FOR THE MONTH identifier
The identifier that represents SNOW-ACCUMULATION, GREATEST IN 24 HOURS, data.
DOM: A specific domain comprised of the characters in the ASCII character set.
AM1 An indicator of the following items:
SNOW-ACCUMULATION depth dimension
SNOW-ACCUMULATION condition code
SNOW-ACCUMULATION dates of occurrence (3 fields)
SNOW-ACCUMULATION quality code

FLD LEN: 4

SNOW-ACCUMULATION GREATEST AMOUNT IN 24 HOURS, FOR THE MONTH depth dimension

The depth of SNOW-ACCUMULATION for the 24-hour period.

MIN: 0000 MAX: 2000 UNITS: centimeters

SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing.

FLD LEN: 1

SNOW-ACCUMULATION GREATEST AMOUNT IN 24 HOURS, FOR THE MONTH condition code

The code that denotes whether a SNOW-ACCUMULATION 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
- 3: The amount occurred on other dates in addition to those listed
- 4: Trace amount occurred on other dates in addition to those listed
- 9: Missing

FLD LEN: 4

SNOW-ACCUMULATION GREATEST AMOUNT IN 24 HOURS, FOR THE MONTH dates of occurrence

The dates of occurrence of SNOW-ACCUMULATION, given as the begin-end date for the 24-hour period, for up to 3 occurrences; e.g., 0405 indicates 24-hour period on days 04-05.

MIN: 0101 MAX: 3131

DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing.

FLD LEN: 4

SNOW-ACCUMULATION GREATEST AMOUNT IN 24 HOURS, FOR THE MONTH dates of occurrence

The dates of occurrence of SNOW-ACCUMULATION, given as the begin-end date for the 24-hour period, for up to 3 occurrences; e.g., 0405 indicates 24-hour period on days 04-05.

MIN: 0101 MAX: 3131

DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing.

FLD LEN: 4

SNOW-ACCUMULATION GREATEST AMOUNT IN 24 HOURS, FOR THE MONTH dates of occurrence

The dates of occurrence of SNOW-ACCUMULATION, given as the begin-end date for the 24-hour period, for up to 3 occurrences; e.g., 0405 indicates 24-hour period on days 04-05.

MIN: 0101 MAX: 3131

DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing.

FLD LEN: 1

SNOW-ACCUMULATION GREATEST AMOUNT IN 24 HOURS, FOR THE MONTH quality code

The code that denotes a quality status of the reported SNOW-ACCUMULATION data.

DOM: A specific domain comprised of the characters in the ASCII character set.

- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 4 = Passed gross limits check , data originate from an NCDC data source
- 5 = Passed all quality control checks, data originate from an NCDC data source
- 6 = Suspect, data originate from an NCDC data source
- 7 = Erroneous, data originate from an NCDC data source
- 9 = Passed gross limits check if element is present

FLD LEN: 3

SNOW-ACCUMULATION FOR THE MONTH occurrence identifier

The identifier that represents SNOW-ACCUMULATION MONTHLY TOTAL.

DOM: A specific domain comprised of the characters in the ASCII character set.

AN1: An indicator for the occurrence of the following items:

SNOW-ACCUMULATION period quantity
SNOW-ACCUMULATION depth dimension
SNOW-ACCUMULATION condition code
SNOW-ACCUMULATION quality code

FLD LEN: 3

SNOW-ACCUMULATION period quantity

The quantity of time over which the SNOW-ACCUMULATION occurred.

MIN: 001 MAX: 744 UNITS: Hours

SCALING FACTOR: 1

DOM: A general domain comprised of the characters in the ASCII character set.
999 = Missing.

FLD LEN: 4

SNOW ACCUMULATION FOR THE MONTH depth dimension

The depth of a SNOW-ACCUMULATION.

MIN: 0000 MAX: 9998 UNITS: centimeters

SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing.

FLD LEN: 1

SNOW-ACCUMULATION FOR THE MONTH 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
- 4: End accumulated period (data may include more than one month)
- 5: End deleted period (data eliminated due to quality problems)
- 6: End missing period
- 7: Data will be included in subsequent observation
- E: Estimated data value (eg, from nearby station)
- 9: Missing

FLD LEN: 1

SNOW-ACCUMULATION FOR THE MONTH quality code

The code that denotes a quality status of the reported SNOW-ACCUMULATION FOR THE MONTH.

DOM: A specific domain comprised of the characters in the ASCII character set.

- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 4 = Passed gross limits check , data originate from an NCDC data source
- 5 = Passed all quality control checks, data originate from an NCDC data source
- 6 = Suspect, data originate from an NCDC data source
- 7 = Erroneous, data originate from an NCDC data source
- 9 = Passed gross limits check if element is present

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.

AO1 - AO4 An indicator of up to 4 repeating fields of the following items:

- LIQUID-PRECIPITATION period quantity
- LIQUID-PRECIPITATION depth dimension
- LIQUID-PRECIPITATION condition code
- LIQUID-PRECIPITATION quality code

FLD LEN: 2

LIQUID-PRECIPIATION period quantity in minutes

The quantity of time over which the LIQUID-PRECIPIATION was measured.

MIN: 00 MAX: 98 UNITS: Minutes

SCALING FACTOR: 1

DOM: A specific domain comprised of the characters in the ASCII character set
99 = Missing.

FLD LEN: 4

LIQUID-PRECIPIATION depth dimension

The depth of LIQUID-PRECIPIATION 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-PRECIPIATION condition code

The code that denotes whether a LIQUID-PRECIPIATION 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
- 3: Begin accumulated period (precipitation amount missing until end of accumulated period)
- 4: End accumulated period
- 5: Begin deleted period (precipitation amount missing due to data problem)
- 6: End deleted period
- 7: Begin missing period
- 8: End missing period
- E: Estimated data value (eg, from nearby station)
- I: Incomplete precipitation amount, excludes one or more missing reports, such as one or more 15-minute reports not included in the 1-hour precipitation total
- J: Incomplete precipitation amount, excludes one or more erroneous reports, such as one or more 1-hour precipitation amounts excluded from the 24-hour total
- 9: Missing

FLD LEN: 1

LIQUID-PRECIPIATION quality code

The code that denotes a quality status of the reported LIQUID-PRECIPIATION data.

DOM: A specific domain comprised of the characters in the ASCII character set.

- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 4 = Passed gross limits check , from DSI-3260 or NCDC ASOS/AWOS
- 5 = Passed all quality control checks, from DSI-3260 or NCDC ASOS/AWOS
- 6 = Suspect, from DSI-3260 or NCDC ASOS/AWOS
- 7 = Erroneous, from DSI-3260 or NCDC ASOS/AWOS
- 9 = Passed gross limits check if element is present

FLD LEN: 3

15 Minute LIQUID-PRECIPIATION occurrence identifier

The identifier that represents an episode of LIQUID-PRECIPIATION.

DOM: A specific domain comprised of the characters in the ASCII character set.

IMPORTANT NOTE: These data are also provided in the AAX section for typical use in applications. The APx data are mainly intended for quality control processing.

- AP1** Indicates HPD gauge value 45 minutes prior to observation time
 - AP2** Indicates HPD gauge value 30 minutes prior to observation time
 - AP3** Indicates HPD gauge value 15 minutes prior to observation time
 - AP4** Indicates HPD gauge value at observation time
- LIQUID-PRECIPIATION depth dimension
LIQUID-PRECIPIATION condition code

LIQUID-PRECIPIATION quality code

FLD LEN: 4

HPD (Hourly Precipitation Data network) gauge value

The HPD Gauge value that is measured at the time indicated.

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

HPD gauge value condition code

Not used at this time. Value set to missing.

DOM: A specific domain comprised of the characters in the ASCII character set.

9=Missing

FLD LEN: 1

HPD gauge value quality code

The code that denotes a quality status of the reported gauge value.

DOM: A specific domain comprised of the characters in the ASCII character set.

0 = Passed gross limits check

1 = Passed all quality control checks

2 = Suspect

3 = Erroneous

4 = Passed gross limits check, data originate from an NCDC data source

5 = Passed all quality control checks, data originate from an NCDC data source

6 = Suspect, data originate from an NCDC data source

7 = Erroneous, data originate from an NCDC data source

9 = Passed gross limits check if element is present

Weather Occurrence Data

FLD LEN: 3

PRESENT-WEATHER-OBSERVATION automated occurrence identifier for ASOS/AWOS data

The identifier that signifies the reporting of present weather.

DOM: A specific domain comprised of the ASCII characters.

AU1 – AU9 An indicator of up to 9 repeating fields of the following items:

PRESENT-WEATHER-OBSERVATION intensity **code**

PRESENT-WEATHER-OBSERVATION descriptor **code**

PRESENT-WEATHER-OBSERVATION precipitation **code**

PRESENT-WEATHER-OBSERVATION obscuration **code**

PRESENT-WEATHER-OBSERVATION other weather phenomena **code**

PRESENT-WEATHER-OBSERVATION combination indicator **code**

PRESENT-WEATHER-OBSERVATION **quality code**

FLD LEN: 1

PRESENT-WEATHER-OBSERVATION intensity and proximity code

DOM: A specific domain comprised of the characters in the ASCII character set.

0 = Not Reported

1 = Light (-)

2 = Moderate or Not Reported (no entry in original observation)

3 = Heavy (+)

4 = Vicinity (VC)

9 = Missing

FLD LEN: 1

PRESENT-WEATHER-OBSERVATION descriptor code

DOM: A specific domain comprised of the characters in the ASCII character set.

0 = No Descriptor

1 = Shallow (MI)

- 2 = Partial (PR)
- 3 = Patches (BC)
- 4 = Low Drifting (DR)
- 5 = Blowing (BL)
- 6 = Shower(s) (SH)
- 7 = Thunderstorm (TS)
- 8 = Freezing (FZ)
- 9 = Missing

FLD LEN: 2

PRESENT-WEATHER-OBSERVATION precipitation code

DOM: A specific domain comprised of the characters in the ASCII character set.

- 00 = No Precipitation
- 01 = Drizzle (DZ)
- 02 = Rain (RA)
- 03 = Snow (SN)
- 04 = Snow Grains (SG)
- 05 = Ice Crystals (IC)
- 06 = Ice Pellets (PL)
- 07 = Hail (GR)
- 08 = Small Hail and/or Snow Pellets (GS)
- 09 = Unknown Precipitation (UP)
- 99 = Missing

FLD LEN: 1

PRESENT-WEATHER-OBSERVATION obscuration code

DOM: A specific domain comprised of the characters in the ASCII character set.

- 0 = No Obscuration
- 1 = Mist (BR)
- 2 = Fog (FG)
- 3 = Smoke (FU)
- 4 = Volcanic Ash (VA)
- 5 = Widespread Dust (DU)
- 6 = Sand (SA)
- 7 = Haze (HZ)
- 8 = Spray (PY)
- 9 = Missing

FLD LEN: 1

PRESENT-WEATHER-OBSERVATION other weather phenomena code

DOM: A specific domain comprised of the characters in the ASCII character set.

- 0 = None Reported
- 1 = Well-Developed Dust/Sand Whirls (PO)
- 2 = Squalls (SQ)
- 3 = Funnel Cloud, Tornado, Waterspout(FC)
- 4 = Sandstorm (SS)
- 5 = Duststorm (DS)
- 9 = Missing

FLD LEN: 1

PRESENT-WEATHER-OBSERVATION combination indicator code

DOM: A specific domain comprised of the characters in the ASCII character set.

- 1 = Not part of combined weather elements
- 2 = Beginning element of combined weather elements
- 3 = Combined with previous weather element to form a single weather report
- 9 = Missing

FLD LEN: 1

PRESENT-WEATHER-OBSERVATION quality code

The code that denotes a quality status of the reported PRESENT-WEATHER-OBSERVATION.

DOM: A specific domain comprised of the characters in the ASCII character set.

- 0 = Passed gross limits check
- 1 = Passed all quality control checks

- 2 = Suspect
- 3 = Erroneous
- 4 = Passed gross limits check , data originate from an NCDC data source
- 5 = Passed all quality control checks, data originate from an NCDC data source
- 6 = Suspect, data originate from an NCDC data source
- 7 = Erroneous, data originate from an NCDC data source
- 9 = Passed gross limits check if element is present

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
AW2 Second automated weather report
AW3 Third automated weather report
AW4 Fourth 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
 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
 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
 77: Snow grains
 78: Ice crystals
 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
 89: Hail
 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 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 4 = Passed gross limits check, data originate from an NCDC data source
- 5 = Passed all quality control checks, data originate from an NCDC data source
- 6 = Suspect, data originate from an NCDC data source
- 7 = Erroneous, data originate from an NCDC data source
- 9 = Passed gross limits check if element is present

FLD LEN: 3

PAST-WEATHER-OBSERVATION summary of day occurrence identifier

The identifier that signifies the reporting of past weather as summarized for the calendar day.

DOM: A specific domain comprised of the characters in the ASCII character set.

- AX1 – AX6** An indicator of up to 6 repeating fields of the following item:
PAST-WEATHER-OBSERVATION atmospheric condition code
PAST-WEATHER-OBSERVATION quality atmospheric condition code
PAST-WEATHER-OBSERVATION period quantity
PAST-WEATHER-OBSERVATION period quality code

FLD LEN: 2

PAST-WEATHER-OBSERVATION atmospheric condition code

The code that denotes a specific type of past weather observed.

DOM: A specific domain comprised of the characters in the ASCII character set.

- 00: none to report
01: fog
02: fog reducing visibility to ¼ mile or less
03: thunder
04: ice pellets
05: hail
06: glaze or rime
07: blowing dust or sand, visibility ½ mile or less
08: smoke or haze
09: blowing snow
10: tornado
11: high or damaging winds
99: missing

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.
4 = Passed gross limits check, data originate from an NCDC data source
5 = Passed all quality control checks, data originate from an NCDC data source
6 = Suspect, data originate from an NCDC data source
7 = Erroneous, data originate from an NCDC data source
9 = Passed gross limits check if element is present

FLD LEN: 2

PAST-WEATHER-OBSERVATION period quantity

The quantity of time over which a PAST-WEATHER-OBSERVATION occurred.

MIN: 24 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.
4 = Passed gross limits check, data originate from an NCDC data source
5 = Passed all quality control checks, data originate from an NCDC data source
6 = Suspect, data originate from an NCDC data source
7 = Erroneous, data originate from an NCDC data source
9 = Passed gross limits check if element is present

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 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
9 = Passed gross limits check if element is present

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 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
9 = Passed gross limits check if element is present

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 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 9 = Passed gross limits check if element is present

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 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 9 = Passed gross limits check if element is present

Climate Reference Network Unique Data

FLD LEN: 3

Subhourly Observed Liquid Precipitation Section: Secondary Sensor identifier

The identifier that indicates the presence of a liquid precipitation measurement made by a secondary precipitation sensor.

DOM: A specific domain comprised of the characters in the ASCII character set.

CB1, CB2 An indicator of the following items:

- PERIOD period quantity
- PRECIPITATION liquid depth
- PRECIP_QC quality code
- PRECIP_FLAG quality code

FLD LEN: 2

PRECIPITATION period quantity

The quantity of time for which the gauge depth was measured.

MIN: 05 MAX: 60 UNITS: Minutes

DOM: A specific domain comprised of the characters in the ASCII character set

99 = Missing

FLD LEN: 6

PRECIPITATION liquid depth

The observed liquid precipitation measurement from the secondary precipitation sensor.

MIN: -99999 MAX: +99999 UNITS: millimeters

SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters (0-9), a plus sign (+), and a minus sign (-).

+99999 = Missing.

FLD LEN: 1

QC quality code

The code that indicates ISD's evaluation of the quality status of the liquid precipitation measurement from the secondary precipitation sensor.

DOM: A specific domain comprised of the numeric characters (0-9).

1 = Passed all quality control checks

3 = Failed all quality control checks

9 = Missing

FLD LEN: 1

PRECIP_FLAG quality code

The code that indicates the network's internal evaluation of the quality status of the reported LIQUID-PRECIPITATION data. Most users will find the preceding quality code DEPTH_QC to be the simplest and most useful quality indicator.

DOM: A specific domain comprised of the numeric characters (0-9)

0 = Passed all quality control checks

other – Did not pass all quality checks

FLD LEN: 3

Hourly Fan Speed Section identifier

The identifier that indicates an hourly observation of the fan speed from an aspirated shield housing the temperature sensor. Three instances of this section appear in the last ISD record of the hour.

DOM: A specific domain comprised of the characters in the ASCII character set.

CF1,CF2,CF3 An indicator of the following items:

FAN speed rate

FAN_QC quality code

FAN_FLAG quality code

FLD LEN: 4

FAN The average fan speed for the hour.

MIN: - 0000 MAX: 9998 UNITS: rotations per second

SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters (0-9).

9999 = Missing.

FLD LEN: 1

FAN_QC quality code

The code that indicates ISD's evaluation of the quality status of the average fan speed for the hour.

DOM: A specific domain comprised of the numeric characters (0-9).

1 = Passed all quality control checks

3 = Failed all quality control checks

9 = Missing

FLD LEN: 1

FAN_QC_FLAG quality code

A flag that indicates the network's internal evaluation of the quality status of the average fan speed for the hour. Most users will find the preceding quality code **FAN_QC** to be the simplest and most useful quality indicator.

DOM: A specific domain comprised of the numeric characters (0-9)

0 = Passed all quality control checks

other – Did not pass all quality checks

FLD LEN: 3

Subhourly Observed Liquid Precipitation Section: Primary Sensor identifier

The identifier that indicates the presence of three concurrent precipitation depth observations made by co-located sensors on the primary precipitation gauge. Three instances of this section (corresponding to the three precipitation sensors) appear in each of the twelve 5-minute data stream records.

DOM: A specific domain comprised of the characters in the ASCII character set.

CG1, CG2, CG3 Three indicators preceding three copies of the following items:

DEPTH liquid depth
DEPTH_QC quality code
DEPTH_FLAG quality code

FLD LEN: 6

DEPTH liquid depth

The observed gauge depth.

MIN: -99999 MAX: +99999 UNITS: millimeters

SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters (0-9), a plus sign (+), and a minus sign (-).

+99999 = Missing.

FLD LEN: 1

DEPTH_QC quality code

The code that indicates ISD's evaluation of the quality status of the observed depth.

DOM: A specific domain comprised of the numeric characters (0-9).

1 = Passed all quality control checks

3 = Failed all quality control checks

9 = Missing

FLD LEN: 1

DEPTH_FLAG quality code

The code that indicates the network's internal evaluation of the quality status of the observed depth. Most users will find the preceding quality code **DEPTH_QC** to be the simplest and most useful quality indicator.

DOM: A specific domain comprised of the numeric characters (0-9).

0 = Passed all quality control checks

other – Did not pass all quality checks

FLD LEN: 3

Hourly/Sub-Hourly Relative Humidity/Temperature Section identifier

The identifier that indicates an observation of relative humidity and temperature **measured at the relative humidity instrument**. This section appears one or more times per hour.

DOM: A specific domain comprised of the characters in the ASCII character set.

CH1, CH2 An indicator of the following items:

RELATIVE HUMIDITY/TEMPERATURE period quantity
AVG_RH_TEMP average air temperature
AVG_RH_TEMP_QC quality code
AVG_RH_TEMP_FLAG quality code
AVG_RH average relative humidity
AVG_RH_QC quality code
AVG_RH_FLAG quality code

FLD LEN: 2

RELATIVE HUMIDITY/TEMPERATURE period quantity in minutes

The quantity of time over which the **RELATIVE HUMIDITY/TEMPERATURE** was measured.

MIN: 00 MAX: 60 UNITS: Minutes

SCALING FACTOR: 1

DOM: A specific domain comprised of the characters in the ASCII character set

99 = Missing.

FLD LEN: 5

AVG_RH_TEMP average air temperature

The average air temperature measured at the relative humidity instrument.
MIN: -9999 MAX: +9998 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: 1

AVG_RH_TEMP_QC quality code
The code that indicates ISD's evaluation of the quality status of the average air temperature measured at the relative humidity instrument.
DOM: A specific domain comprised of the numeric characters (0-9).
1 = Passed all quality control checks
3 = Failed all quality control checks
9 = Missing

FLD LEN: 1

AVG_RH_TEMP_FLAG quality code
The code that indicates the network's internal evaluation of the quality status of the average air temperature measured at the relative humidity instrument. Most users will find the preceding quality code **AVG_RH_TEMP_QC** to be the simplest and most useful quality indicator.
DOM: A specific domain comprised of the numeric characters (0-9).
0 = Passed all quality control checks
other – Did not pass all quality checks

FLD LEN: 4

AVG_RH average relative humidity
The average relative humidity measured at the relative humidity instrument.
MIN: 0000 MAX: 1000 UNITS: percent
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing.

FLD LEN: 1

AVG_RH_QC quality code
The code that indicates ISD's evaluation of the quality status of the average relative humidity.
DOM: A specific domain comprised of the numeric characters (0-9).
1 = Passed all quality control checks
3 = Failed all quality control checks
9 = Missing

FLD LEN: 1

AVG_RH_FLAG quality code
The code that indicates the network's internal evaluation of the quality status of the average relative humidity. Most users will find the preceding quality code **AVG_RH_QC** to be the simplest and most useful quality indicator.
DOM: A specific domain comprised of the numeric characters (0-9).
0 = Passed all quality control checks
other – Did not pass all quality checks

FLD LEN: 3

Hourly Relative Humidity/Temperature Section identifier
The identifier that indicates an hourly observation of relative humidity and temperature **measured at the relative humidity instrument**. This section appears in the last ISD record of the hour.
DOM: A specific domain comprised of the characters in the ASCII character set.
C11 An indicator of the following items:
MIN_RH_TEMP hourly air temperature
MIN_RH_TEMP_QC quality code
MIN_RH_TEMP_FLAG quality code
MAX_RH_TEMP hourly air temperature
MAX_RH_TEMP_QC quality code

MAX_RH_TEMP_FLAG quality code
STD_RH_TEMP hourly air temperature standard deviation
STD_RH_TEMP_QC quality code
STD_RH_TEMP_FLAG quality code
STD_RH hourly relative humidity standard deviation
STD_RH_QC quality code
STD_RH_FLAG quality code

FLD LEN: 5

MIN_RH_TEMP hourly air temperature
The minimum air temperature measured at the relative humidity instrument.
MIN: -9999 MAX: +9999 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: 1

MIN_RH_TEMP_QC quality code
The code that indicates ISD's evaluation of the quality status of the minimum hourly air temperature measured at the relative humidity instrument.
DOM: A specific domain comprised of the numeric characters (0-9).
1 = Passed all quality control checks
3 = Failed all quality control checks
9 = Missing

FLD LEN: 1

MIN_RH_TEMP_FLAG quality code
The code that indicates the network's internal evaluation of the quality status of the minimum hourly air temperature measured at the relative humidity instrument. Most users will find the preceding quality code
AVG_RH_TEMP_QC to be the simplest and most useful quality indicator.
DOM: A specific domain comprised of the numeric characters (0-9).
0 = Passed all quality control checks
other – Did not pass all quality checks

FLD LEN: 5

MAX_RH_TEMP hourly air temperature
The maximum air temperature measured at the relative humidity instrument.
MIN: -9999 MAX: +9999 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: 1

MAX_RH_TEMP_QC quality code
The code that indicates ISD's evaluation of the quality status of the maximum hourly air temperature measured at the relative humidity instrument.
DOM: A specific domain comprised of the numeric characters (0-9).
1 = Passed all quality control checks
3 = Failed all quality control checks
9 = Missing

FLD LEN: 1

MAX_RH_TEMP_FLAG quality code
The code that indicates the network's internal evaluation of the quality status of the maximum hourly air temperature measured at the relative humidity instrument. Most users will find the preceding quality code
AVG_RH_TEMP_QC to be the simplest and most useful quality indicator.
DOM: A specific domain comprised of the numeric characters (0-9).
0 = Passed all quality control checks
other – Did not pass all quality checks

FLD LEN: 5

STD_RH_TEMP hourly air temperature standard deviation
The standard deviation for the hourly air temperature measured at the relative humidity instrument.

MIN: 00000 MAX: 99999
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).
99999 = Missing.

FLD LEN: 1

STD_RH_TEMP_QC quality code

The code that indicates ISD's evaluation of the quality status of the standard deviation for the air temperature measured at the relative humidity instrument.

DOM: A specific domain comprised of the numeric characters (0-9).
1 = Passed all quality control checks
3 = Failed all quality control checks
9 = Missing

FLD LEN: 1

STD_RH_TEMP_FLAG quality code

The code that indicates the network's internal evaluation of the quality status of the standard deviation for the air temperature measured at the relative humidity instrument. Most users will find the preceding quality code

STD_RH_TEMP_QC to be the simplest and most useful quality indicator.

DOM: A specific domain comprised of the numeric characters (0-9).
0 = Passed all quality control checks
other – Did not pass all quality checks

FLD LEN: 5

STD_RH hourly relative humidity standard deviation

The hourly relative humidity standard deviation.

MIN: 00000 MAX: 99999

SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters (0-9).
99999 = Missing.

FLD LEN: 1

STD_RH_QC quality code

The code that indicates ISD's evaluation of the quality status of the hourly relative humidity standard deviation.

DOM: A specific domain comprised of the numeric characters (0-9).
1 = Passed all quality control checks
3 = Failed all quality control checks
9 = Missing

FLD LEN: 1

STD_RH_FLAG quality code

The code that indicates the network's internal evaluation of the quality status of the hourly relative humidity standard deviation. Most users will find the preceding quality code **STD_RH_QC** to be the simplest and most useful quality indicator.

DOM: A specific domain comprised of the numeric characters (0-9).
0 = Passed all quality control checks
other – Did not pass all quality checks

FLD LEN: 3

Hourly Battery Voltage Section identifier

The identifier that indicates an hourly observation of battery voltages. This section appears in the last ISD record of the hour.

DOM: A specific domain comprised of the characters in the ASCII character set.

CN1 An indicator of the following items:

- BATVOL average voltage
- BATVOL_QC quality code
- BATVOL_FLAG quality code
- BATVOL_FL average voltage
- BATVOL_FL_QC quality code
- BATVOL_FL_FLAG quality code

BATVOL_DL average voltage
BATVOL_DL_QC quality code
BATVOL_DL_FLAG quality code

FLD LEN: 4

BATVOL average voltage

The hourly average voltage for the batteries powering the sensors and the transmitter.

MIN: 0000 MAX: 9999 UNITS: volts

SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters (0-9).

9999 = Missing.

FLD LEN: 1

BATVOL_QC quality code

The code that indicates ISD's evaluation of the quality status of the hourly average station battery voltage.

DOM: A specific domain comprised of the numeric characters (0-9).

1 = Passed all quality control checks

3 = Failed all quality control checks

9 = Missing

FLD LEN: 1

BATVOL_QC_FLAG quality code

A flag that indicates the network's internal evaluation of the quality status of the hourly average station battery voltage.

Most users will find the preceding quality code **BATVOL_QC** to be the simplest and most useful quality indicator.

DOM: A specific domain comprised of the numeric characters (0-9)

0 = Passed all quality control checks

other – Did not pass all quality checks

FLD LEN: 4

BATVOL_FL average voltage

The voltage for the batteries powering the observing station while the station is transmitting ("full load").

MIN: 0000 MAX: 9999 UNITS: volts

SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters (0-9).

9999 = Missing.

FLD LEN: 1

BATVOL_FL_QC quality code

The code that indicates ISD's evaluation of the quality status of the battery voltage under full load.

DOM: A specific domain comprised of the numeric characters (0-9).

1 = Passed all quality control checks

3 = Failed all quality control checks

9 = Missing

FLD LEN: 1

BATVOL_FL_QC_FLAG quality code

A flag that indicates the network's internal evaluation of the quality status of battery voltage under full load. Most users will find the preceding quality code **BATVOL_FL_QC** to be the simplest and most useful quality indicator.

DOM: A specific domain comprised of the numeric characters (0-9)

0 = Passed all quality control checks

other – Did not pass all quality checks

FLD LEN: 4

BATVOL_DL average voltage

The voltage for the batteries powering the datalogger.

MIN: 0000 MAX: 9999 UNITS: volts

SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters (0-9).

9999 = Missing.

FLD LEN: 1

BATVOL_DL_QC quality code

The code that indicates ISD's evaluation of the quality status of the datalogger battery voltage.

DOM: A specific domain comprised of the numeric characters (0-9).
1 = Passed all quality control checks
3 = Failed all quality control checks
9 = Missing

FLD LEN: 1

BATVOL_DL_QC_FLAG quality code

A flag that indicates the network's internal evaluation of the quality status of the datalogger battery voltage. Most users will find the preceding quality code **BATVOL_DL_QC** to be the simplest and most useful quality indicator.

DOM: A specific domain comprised of the numeric characters (0-9)
0 = Passed all quality control checks
other – Did not pass all quality checks

FLD LEN: 3

Hourly Diagnostic Section identifier

The identifier that indicates an hourly observation of miscellaneous diagnostic data. This section appears in the last ISD record of the hour

DOM: A specific domain comprised of the characters in the ASCII character set.

CN2 An indicator of the following items:
TPANEL equipment temperature
TPANEL_QC quality code
TPANEL_FLAG quality code
TINLET_MAX equipment temperature
TINLET_MAX_QC quality code
TINLET_MAX_FLAG quality code
OPENDOOR_TM equipment status
OPENDOOR_TM_QC quality code
OPENDOOR_TM_FLAG quality code

FLD LEN: 5

TPANEL equipment temperature

The temperature of the datalogger panel.

MIN: -9999 MAX: +9999 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: 1

TPANEL_QC quality code

The code that indicates ISD's evaluation of the quality status of the datalogger panel temperature.

DOM: A specific domain comprised of the numeric characters (0-9).

1 = Passed all quality control checks
3 = Failed all quality control checks
9 = Missing

FLD LEN: 1

TPANEL_FLAG quality code

A flag that indicates the network's internal evaluation of the quality status of the datalogger panel temperature. Most users will find the preceding quality code **TPANEL_QC** to be the simplest and most useful quality indicator.

DOM: A specific domain comprised of the numeric characters (0-9)

0 = Passed all quality control checks
other – Did not pass all quality checks

FLD LEN: 5

TINLET_MAX equipment temperature

The maximum temperature of the Geonor inlet for the hour.

MIN: -9999 MAX: +9999 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: 1

TINLET_MAX_QC quality code

The code that indicates ISD's evaluation of the quality status of the maximum temperature of the Geonor inlet for the hour.

DOM: A specific domain comprised of the numeric characters (0-9).
1 = Passed all quality control checks
3 = Failed all quality control checks
9 = Missing

FLD LEN: 1

TINLET_MAX_FLAG quality code

A flag that indicates the network's internal evaluation of the quality status of the maximum temperature of the Geonor inlet for the hour. Most users will find the preceding quality code **TINLET_QC** to be the simplest and most useful quality indicator.

DOM: A specific domain comprised of the numeric characters (0-9)
0 = Passed all quality control checks
other – Did not pass all quality checks

FLD LEN: 2

OPENDOOR_TM equipment status

The time in minutes the datalogger door was open during the hour.

MIN: 00 MAX: 60 UNITS: minutes

DOM: A general domain comprised of the numeric characters (0-9).
99 = Missing.

FLD LEN: 1

OPENDOOR_TM_QC quality code

The code that indicates ISD's evaluation of the quality status of the time the datalogger door was open.

DOM: A specific domain comprised of the numeric characters (0-9).
1 = Passed all quality control checks
3 = Failed all quality control checks
9 = Missing

FLD LEN: 1

OPENDOOR_TM_FLAG quality code

A flag that indicates the network's internal evaluation of the quality status of the time the datalogger door was open. Most users will find the preceding quality code **OPENDOOR_TM_QC** to be the simplest and most useful quality indicator.

DOM: A specific domain comprised of the numeric characters (0-9)
0 = Passed all quality control checks
other – Did not pass all quality checks

FLD LEN: 3

Secondary Hourly Diagnostic Section identifier

The identifier that indicates an hourly observation of miscellaneous diagnostic data. This section appears in the last ISD record of the hour

DOM: A specific domain comprised of the characters in the ASCII character set.

CN3 An indicator of the following items:

- REFRESAVG resistance
- REFRESAVG_QC quality code
- REFRESAVG_FLAG quality code
- DSIGNATURE identifier
- DSIGNATURE_QC quality code
- DSIGNATURE_FLAG quality code

FLD LEN: 6

REFRESAVG resistance

The reference resistor average.

MIN: 000000 MAX: 999999 UNITS: ohms

SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters (0-9).

999999 = Missing.

FLD LEN: 1

REFRESAVG_QC quality code

The code that indicates ISD's evaluation of the quality status of the datalogger reference resistor average.

DOM: A specific domain comprised of the numeric characters (0-9).

- 1 = Passed all quality control checks
- 3 = Failed all quality control checks
- 9 = Missing

FLD LEN: 1

REFRESAVG_FLAG quality code

A flag that indicates the network's internal evaluation of the quality status of the reference resistor average. Most users will find the preceding quality code **REFRESAVG_QC** to be the simplest and most useful quality indicator.

DOM: A specific domain comprised of the numeric characters (0-9)

- 0 = Passed all quality control checks
- other – Did not pass all quality checks

FLD LEN: 6

DSIGNATURE identifier

A signature generated by the datalogger which changes if there is a content or sequence change in the datalogger programs.

MIN: 000000 MAX: 999999

SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters (0-9).

999999 = Missing.

FLD LEN: 1

DSIGNATURE_QC quality code

The code that indicates ISD's evaluation of the quality status of the datalogger signature.

DOM: A specific domain comprised of the numeric characters (0-9).

- 1 = Passed all quality control checks
- 3 = Failed all quality control checks
- 9 = Missing

FLD LEN: 1

DSIGNATURE_FLAG quality code

A flag that indicates the network's internal evaluation of the quality status of the datalogger signature. Most users will find the preceding quality code **DSIGNATURE_QC** to be the simplest and most useful quality indicator.

DOM: A specific domain comprised of the numeric characters (0-9)

- 0 = Passed all quality control checks
- other – Did not pass all quality checks

FLD LEN: 3

Secondary Hourly Diagnostic Section identifier

The identifier that indicates another hourly observation of miscellaneous diagnostic data. This section appears in the last ISD record of the hour

DOM: A specific domain comprised of the characters in the ASCII character set.

CN4 An indicator of the following items:

- LIQUID-PRECIPIATION gauge heater flag bit field
- LIQUID-PRECIPIATION gauge flag quality code
- LIQUID-PRECIPIATION gauge flag quality code
- DOORFLAG field
- DOORFLAG quality code
- DOORFLAG quality code
- FORTRANS wattage
- FORTRANS wattage quality code
- FORTRANS wattage quality code
- REFLTRANS wattage
- REFLTRANS wattage quality code
- REFLTRANS wattage quality code

FLD LEN: 1

LIQUID-PRECIPITATION gauge heater flag bit field
The code that indicates the gauge heater flag bit field setting.
DOM: A specific domain comprised of the numeric characters (0-1).
0 = Off
1 = On
9 = Missing
MIN: 0 MAX: 9

FLD LEN: 1

LIQUID-PRECIPITATION gauge heater flag quality code
The code that indicates ISD's evaluation of the quality status of the gauge heater flag code.
DOM: A specific domain comprised of the numeric characters (0-9).
1 = Passed all quality control checks
3 = Failed all quality control checks
9 = Missing

FLD LEN: 1

LIQUID-PRECIPITATION gauge heater flag quality code
A flag that indicates the network's internal evaluation of the quality status of the gauge heater flag code. Most users will find the preceding quality code to be the simplest and most useful quality indicator.
DOM: A specific domain comprised of the numeric characters (0-9)
0 = Passed all quality control checks
other – Did not pass all quality checks

FLD LEN: 1

DOORFLAG field
The code that indicates the datalogger door bit field setting.
DOM: A specific domain comprised of the numeric characters (0-1).
0 = Off
1 = On
9 = Missing
MIN: 0 MAX: 9

FLD LEN: 1

DOORFLAG field quality code
The code that indicates ISD's evaluation of the quality status of the datalogger door bit field setting.
DOM: A specific domain comprised of the numeric characters (0-9).
1 = Passed all quality control checks
3 = Failed all quality control checks
9 = Missing

FLD LEN: 1

DOORFLAG field quality code
A flag that indicates the network's internal evaluation of the quality status of the datalogger door bit field setting code. Most users will find the preceding quality code to be the simplest and most useful quality indicator.
DOM: A specific domain comprised of the numeric characters (0-9)
0 = Passed all quality control checks
other – Did not pass all quality checks

FLD LEN: 3

FORTTRANS wattage
Forward transmitter RF power in tenths of watts
MIN: 000 MAX: 500 UNITS: Watts
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).
999 = Missing

FLD LEN: 1

FORTTRANS wattage quality code
The code that indicates ISD's evaluation of the quality status of the forward transmitter RF power.
DOM: A specific domain comprised of the numeric characters (0-9).

1 = Passed all quality control checks
3 = Failed all quality control checks
9 = Missing

FLD LEN: 1

FORTRANS wattage quality code

A flag that indicates the network's internal evaluation of the quality status of the forward transmitter RF power. Most users will find the preceding quality code to be the simplest and most useful quality indicator.

DOM: A specific domain comprised of the numeric characters (0-9)

0 = Passed all quality control checks
other – Did not pass all quality checks

FLD LEN: 3

REFLTRANS wattage

Reflected transmitter RF power in tenths of watts

MIN: 000 MAX: 500 UNITS: Watts

SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters (0-9).

999 = Missing

FLD LEN: 1

REFLTRANS wattage quality code

The code that indicates ISD's evaluation of the quality status of the reflected transmitter RF power.

DOM: A specific domain comprised of the numeric characters (0-9).

1 = Passed all quality control checks
3 = Failed all quality control checks
9 = Missing

FLD LEN: 1

REFLTRANS wattage quality code

A flag that indicates the network's internal evaluation of the quality status of the reflected transmitter RF power. Most users will find the preceding quality code to be the simplest and most useful quality indicator.

DOM: A specific domain comprised of the numeric characters (0-9)

0 = Passed all quality control checks
other – Did not pass all quality checks

FLD LEN: 3

CRN Control Section identifier

The identifier that indicates an occurrence of datalogger program information.

DOM: A specific domain comprised of the characters in the ASCII character set.

CR1 An indicator of the following items:

DL_VN identifier
DL_VN_QC quality code
DL_VN_FLAG quality code

FLD LEN: 5

DL_VN identifier

The version number which uniquely identifies the datalogger program that produced the CRN observation for this hour. This section appears once in every ISD record.

MIN: 00000 MAX: 99999

SCALING FACTOR: 1000

DOM: A general domain comprised of the numeric characters (0-9).

FLD LEN: 1

DL_VN_QC quality code

The code that indicates ISD's evaluation of the quality status of the reported datalogger program version number.

DOM: A specific domain comprised of the numeric characters (0-9).

1 = Passed all quality control checks
3 = Failed all quality control checks
9 = Missing

FLD LEN: 1

DL_VN_FLAG quality code

A flag that indicates the network's internal evaluation of the quality status of the reported datalogger program version number. Most users will find the preceding quality code **DL_VN_QC** to be the simplest and most useful quality indicator.

DOM: A specific domain comprised of the numeric characters (0-9).

0 = Passed all quality control checks
other – Did not pass all quality checks

FLD LEN: 3

Subhourly Temperature Section identifier

The identifier that indicates one of three concurrent air temperature observations made by co-located sensors. Three instances of this section (corresponding to the three temperature sensors) appear in each of the twelve 5-minute data stream records. In the 15-minute data stream, the three instances of this section appear in the last record of the hour, and contain the average temperature for the last 5 minutes of the hour.

DOM: A specific domain comprised of the characters in the ASCII character set.

CT1, CT2, CT3 Three indicators preceding three copies of the following items:

AVG_TEMP air temperature
AVG_TEMP_QC quality code
AVG_TEMP_FLAG quality code

FLD LEN: 5

AVG_TEMP air temperature

The average air temperature for a 5-minute period.

MIN: -9999 MAX: +9999 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: 1

AVG_TEMP_QC quality code

The code that indicates ISD's evaluation of the quality status of the 5-minute air temperature average.

DOM: A specific domain comprised of the numeric characters (0-9).

1 = Passed all quality control checks
3 = Failed all quality control checks
9 = Missing

FLD LEN: 1

AVG_TEMP_FLAG quality code

A flag that indicates the network's internal evaluation of the quality status of the 5-minute air temperature average. Most users will find the preceding quality code **AVG_TEMP_QC** to be the simplest and most useful quality indicator.

DOM: A specific domain comprised of the numeric characters (0-9)

0 = Passed all quality control checks
other – Did not pass all quality checks

FLD LEN: 3

Hourly Temperature Section identifier

The identifier that indicates one of three concurrent air temperature observations made by co-located sensors. Three instances of this section (corresponding to the three temperature sensors) appear in the last ISD record of the hour.

DOM: A specific domain comprised of the characters in the ASCII character set.

CU1, CU2, CU3 Three indicators preceding three copies of the following items:

TEMP_AVG air temperature
TEMP_AVG_QC quality code
TEMP_AVG_FLAG quality code
TEMP_STD air temperature standard deviation
TEMP_STD_QC quality code

TEMP_STD_FLAG quality code

FLD LEN: 5

TEMP_AVG air temperature

The average air temperature for an hour.

MIN: -9999 MAX: +9999 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: 1

TEMP_AVG_QC quality code

The code that indicates ISD's evaluation of the quality status of the hourly temperature average.

DOM: A specific domain comprised of the numeric characters (0-9).

1 = Passed all quality control checks

3 = Failed all quality control checks

9 = Missing

FLD LEN: 1

TEMP_AVG_FLAG quality code

A flag that indicates the network's internal evaluation of the quality status the hourly temperature average. Most users will find the preceding quality code **TEMP_AVG_QC** to be the simplest and most useful quality indicator.

DOM: A specific domain comprised of the numeric characters (0-9)

0 = Passed all quality control checks

other – Did not pass all quality checks

FLD LEN: 4

TEMP_STD air temperature standard deviation

The temperature standard deviation.

MIN: 0000 MAX: 9999

SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters (0-9).

9999 = Missing.

FLD LEN: 1

TEMP_STD_QC quality code

The code that indicates ISD's evaluation of the quality status of the hourly temperature standard deviation.

DOM: A specific domain comprised of the numeric characters (0-9).

1 = Passed all quality control checks

3 = Failed all quality control checks

9 = Missing

FLD LEN: 1

TEMP_STD_FLAG quality code

A flag that indicates the network's internal evaluation of the quality status the hourly temperature standard deviation. Most users will find the preceding quality code **TEMP_STD_QC** to be the simplest and most useful quality indicator.

DOM: A specific domain comprised of the numeric characters (0-9)

0 = Passed all quality control checks

other – Did not pass all quality checks

FLD LEN: 3

Hourly Temperature Extreme Section identifier

The identifier that indicates one of three concurrent air temperature observations made by co-located sensors. Three instances of this section (corresponding to the three temperature sensors) appear in the last ISD record of the hour.

DOM: A specific domain comprised of the characters in the ASCII character set.

CV1, CV2, CV3 Three indicators preceding three copies of the following items:

TEMP_MIN minimum air temperature

TEMP_MIN_QC quality code

TEMP_MIN_FLAG quality code

TEMP_MIN_TIME time of minimum air temperature
TEMP_MIN_TIME_QC quality code
TEMP_MIN_TIME_FLAG quality code
TEMP_MAX maximum air temperature
TEMP_MAX_QC quality code
TEMP_MAX_FLAG quality code
TEMP_MAX_TIME time of maximum air temperature
TEMP_MAX_TIME_QC quality code
TEMP_MAX_TIME_FLAG quality code

FLD LEN: 5

TEMP_MIN minimum air temperature
The minimum air temperature for the hour.
MIN: -9999 MAX: +9998 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: 1

TEMP_MIN_QC quality code
The code that indicates ISD's evaluation of the quality status of the minimum hourly temperature.
DOM: A specific domain comprised of the numeric characters (0-9).
1 = Passed all quality control checks
3 = Failed all quality control checks
9 = Missing

FLD LEN: 1

TEMP_MIN_FLAG quality code
A flag that indicates the network's internal evaluation of the quality status the minimum hourly. Most users will find the preceding quality code **TEMP_MIN_QC** to be the simplest and most useful quality indicator.
DOM: A specific domain comprised of the numeric characters (0-9)
0 = Passed all quality control checks
other – Did not pass all quality checks

FLD LEN: 4

TEMP_MIN_TIME time of minimum air temperature
The time at which the minimum temperature occurred, in z-time HHMM format
MIN: 0000 MAX: 2359
DOM: A specific domain comprised of the numeric characters (0-9)
9999 = Missing.

FLD LEN: 1

TEMP_MIN_TIME_QC quality code
The code that indicates ISD's evaluation of the quality status of the time of minimum hourly temperature.
DOM: A specific domain comprised of the numeric characters (0-9).
1 = Passed all quality control checks
3 = Failed all quality control checks
9 = Missing

FLD LEN: 1

TEMP_MIN_TIME_FLAG quality code
A flag that indicates the network's internal evaluation of the quality status of the time of minimum hourly temperature. Most users will find the preceding quality code **TEMP_MIN_TIME_QC** to be the simplest and most useful quality indicator.
DOM: A specific domain comprised of the numeric characters (0-9)
0 = Passed all quality control checks
other – Did not pass all quality checks

FLD LEN: 5

TEMP_MAX maximum air temperature
The maximum air temperature for an hour.
MIN: -9999 MAX: +9999 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: 1

TEMP_MAX_QC quality code

The code that indicates ISD's evaluation of the quality status of the maximum hourly.

DOM: A specific domain comprised of the numeric characters (0-9).

- 1 = Passed all quality control checks
- 3 = Failed all quality control checks
- 9 = Missing

FLD LEN: 1

TEMP_MAX_FLAG quality code

A flag that indicates the network's internal evaluation of the quality status the maximum hourly. Most users will find the preceding quality code **TEMP_MAX_QC** to be the simplest and most useful quality indicator.

DOM: A specific domain comprised of the numeric characters (0-9)

- 0 = Passed all quality control checks
- other – Did not pass all quality checks

FLD LEN: 4

TEMP_MAX_TIME time of maximum air temperature

The time at which the maximum temperature occurred, in z-time HHMM format

MIN: 0000 MAX: 2359

DOM: A specific domain comprised of the numeric characters (0-9)
9999 = Missing.

FLD LEN: 1

TEMP_MAX_TIME_QC quality code

The code that indicates ISD's evaluation of the quality status of the time of maximum hourly temperature.

DOM: A specific domain comprised of the numeric characters (0-9).

- 1 = Passed all quality control checks
- 3 = Failed all quality control checks
- 9 = Missing

FLD LEN: 1

TEMP_MAX_TIME_FLAG quality code

A flag that indicates the network's internal evaluation of the quality status of the time of maximum hourly temperature. Most users will find the preceding quality code **TEMP_MAX_TIME_QC** to be the simplest and most useful quality indicator.

DOM: A specific domain comprised of the numeric characters (0-9)

- 0 = Passed all quality control checks
- other – Did not pass all quality checks

FLD LEN: 3

Subhourly Wetness Section identifier

The identifier that indicates a subhourly wetness sensor observation.

DOM: A specific domain comprised of the characters in the ASCII character set.

CW1 An indicator of the following items:

- WET1 wetness indicator
- WET1_QC quality code
- WET1_FLAG quality code
- WET2 wetness indicator
- WET2_QC quality code
- WET2_FLAG quality code

FLD LEN: 5

WET1 wetness indicator

Wetness sensor channel 1 value indicating the existence or non-existence of moisture on the sensor.

MIN: 00000 MAX: 99999

SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters (0-9).
99999 = Missing.

FLD LEN: 1

WET1_QC quality code

The code that indicates ISD's evaluation of the quality status of the wetness sensor channel 1 value.

DOM: A specific domain comprised of the numeric characters (0-9).

- 1 = Passed all quality control checks
- 3 = Failed all quality control checks
- 9 = Missing

FLD LEN: 1

WET1_FLAG quality code

The code that indicates ISD's evaluation of the quality status of the wetness sensor channel 1 value.

Most users will find the preceding quality code **WET1_QC** to be the simplest and most useful quality indicator.

DOM: A specific domain comprised of the numeric characters (0-9)

- 0 = Passed all quality control checks
- other – Did not pass all quality checks

FLD LEN: 5

WET2 wetness indicator

Wetness sensor channel 2 value indicating the existence or non-existence of moisture on the sensor.

MIN: 00000 MAX: 99999

SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters (0-9).
99999 = Missing.

FLD LEN: 1

WET2_QC quality code

The code that indicates ISD's evaluation of the quality status of the wetness sensor channel 2 value.

DOM: A specific domain comprised of the numeric characters (0-9).

- 1 = Passed all quality control checks
- 3 = Failed all quality control checks
- 9 = Missing

FLD LEN: 1

WET2_FLAG quality code

The code that indicates ISD's evaluation of the quality status of the wetness sensor channel 2 value.

Most users will find the preceding quality code **WET2_QC** to be the simplest and most useful quality indicator.

DOM: A specific domain comprised of the numeric characters (0-9)

- 0 = Passed all quality control checks
- other – Did not pass all quality checks

FLD LEN: 3

Hourly Geonor Vibrating Wire Summary Section identifier

The identifier that indicates the presence of summary data for three concurrent precipitation observations made by co-located sensors. It appears in the last ISD record of the hour for the 15-minute data stream only. This section is not present for the 5-minute data stream.

Note: This section contains the frequencies which are the fundamental output from a vibrating wire transducer. They were transmitted as part of datastream versions which held 15 minute precipitation values. When the 5 minute datastream was defined, the decision was made to transmit engineering units such as millimeters which could be reversed to the fundamental output values using the formulas and coefficients found in the metadata.

DOM: A specific domain comprised of the characters in the ASCII character set.

CX1, CX2, CX3 An indicator of the following items:

- PRECIPITATION total hourly precipitation
- PRECIP_QC quality code
- PRECIP_FLAG quality code
- FREQ_AVG hourly average frequency
- FREQ_AVG_QC quality code
- FREQ_AVG_FLAG

FREQ_MIN hourly minimum frequency
FREQ_MIN_QC quality code
FREQ_MIN_FLAG quality code
FREQ_MAX hourly maximum frequency
FREQ_MAX_QC quality code
FREQ_MAX_FLAG quality code

FLD LEN: 6

PRECIPITATION total hourly precipitation

The total hourly precipitation amount for the sensor.

MIN: -99999 MAX: +99999 UNITS: millimeters

SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters (0-9), a plus sign (+), and a minus sign (-)
+99999 = Missing.

FLD LEN: 1

PRECIP_QC quality code

The code that indicates ISD's evaluation of the quality status of the hourly precipitation amount.

DOM: A specific domain comprised of the numeric characters (0-9).

1 = Passed all quality control checks

3 = Failed all quality control checks

9 = Missing

FLD LEN: 1

PRECIP_FLAG quality code

The code that indicates the network's internal evaluation of the quality status of the hourly precipitation amount. Most users will find the preceding quality code **PRECIP_QC** to be the simplest and most useful quality indicator.

DOM: A specific domain comprised of the numeric characters (0-9).

0 = Passed all quality control checks

other – Did not pass all quality checks

FLD LEN: 4

FREQ_AVG hourly average frequency

The hourly average frequency for the sensor.

MIN: 0000 MAX: 9999 UNITS: Hertz

DOM: A general domain comprised of the numeric characters (0-9).

9999 = Missing.

FLD LEN: 1

FREQ_AVG_QC quality code

The code that indicates ISD's evaluation of the quality status of the hourly average frequency.

DOM: A specific domain comprised of the numeric characters (0-9).

1 = Passed all quality control checks

3 = Failed all quality control checks

9 = Missing

FLD LEN: 1

FREQ_AVG_FLAG quality code

The code that indicates the network's internal evaluation of the quality status of the hourly average frequency. Most users will find the preceding quality code **FREQ_AVG_QC** to be the simplest and most useful quality indicator.

DOM: A specific domain comprised of the numeric characters (0-9).

0 = Passed all quality control checks

other – Did not pass all quality checks

FLD LEN: 4

FREQ_MIN hourly minimum frequency

The minimum frequency during the hour for the sensor.

MIN: 0000 MAX: 9999 UNITS: Hertz

DOM: A general domain comprised of the numeric characters (0-9).

9999 = Missing.

FLD LEN: 1

FREQ_MIN_QC quality code

The code that indicates ISD's evaluation of the quality status of the hourly minimum frequency.

DOM: A specific domain comprised of the numeric characters (0-9).

- 1 = Passed all quality control checks
- 3 = Failed all quality control checks
- 9 = Missing

FLD LEN: 1

FREQ_MIN_FLAG quality code

The code that indicates the network's internal evaluation of the quality status of the hourly minimum frequency. Most users will find the preceding quality code **FREQ_MIN_QC** to be the simplest and most useful quality indicator.

DOM: A specific domain comprised of the numeric characters (0-9).

- 0 = Passed all quality control checks
- other – Did not pass all quality checks

FLD LEN: 4

FREQ_MAX hourly maximum frequency

The minimum frequency during the hour for the sensor.

MIN: 0000 MAX: 9999 UNITS: Hertz

DOM: A general domain comprised of the numeric characters (0-9).

9999 = Missing.

FLD LEN: 1

FREQ_MAX_QC quality code

The code that indicates ISD's evaluation of the quality status of the hourly maximum frequency.

DOM: A specific domain comprised of the numeric characters (0-9).

- 1 = Passed all quality control checks
- 3 = Failed all quality control checks
- 9 = Missing

FLD LEN: 1

FREQ_MAX_FLAG quality code

The code that indicates the network's internal evaluation of the quality status of the hourly maximum frequency. Most users will find the preceding quality code **FREQ_MAX_QC** to be the simplest and most useful quality indicator.

DOM: A specific domain comprised of the numeric characters (0-9).

- 0 = Passed all quality control checks
- other – Did not pass all quality checks

Network Metadata

FLD LEN: 3

US-NETWORK-METADATA identifier

The identifier that indicates the occurrence of US Network metadata, used in NCDC data processing.

DOM: A specific domain comprised of the ASCII characters.

CO1 An indicator of the following item:

- NETWORK-METADATA climate division number
- NETWORK-METADATA UTC-LST time conversion

FLD LEN: 2

NETWORK-METADATA climate division number

The climate division number, for this station, within the US state that it resides.

MIN: 00 MAX: 09 UNITS: N/A

SCALING FACTOR: 1

DOM: A general domain comprised of the numeric characters (0-9).

99 = Missing

FLD LEN: 3

NETWORK-METADATA UTC-LST time conversion

The UTC to LST time conversion for this station.

MIN: -12 MAX: +12 UNITS: hours
SCALING FACTOR: 1
DOM: A general domain comprised of the numeric characters (0-9), a plus sign (+), and a minus sign (-)
+99 = Missing

FLD LEN: 3
US-COOPERATIVE-NETWORK-ELEMENT-TIME-OFFSET identifier
The identifier that indicates a specified element's observation time differs from the time listed in "Control Section".
DOM: A specific domain comprised of the ASCII characters.
CO2 - CO9 An indicator of up to 8 repeating fields of the following item:
COOPERATIVE-NETWORK-ELEMENT-ID
COOPERATIVE-NETWORK-TIME-OFFSET

FLD LEN: 3
COOPERATIVE-NETWORK-ELEMENT-ID
The element identifier to be offset, based on the identifier as shown in this document.
DOM: A general domain comprised of the characters in the ASCII character set.
99 = Missing

FLD LEN: 5
COOPERATIVE-NETWORK-TIME-OFFSET
The offset in hours. To obtain the actual observation time of the element/parameter indicated, add the value in this field to the date-time value in the "Control Section."
MIN: -9999 MAX: +9998 UNITS: Hours
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9), a plus sign (+), and a minus sign (-).
+9999 = Missing

Runway Visual Range Data

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 An indicator of the following items:
RUNWAY-VISUAL-RANGE-OBSERVATION direction angle
RUNWAY-VISUAL-RANGE-OBSERVATION runway designator code
RUNWAY-VISUAL-RANGE-OBSERVATION visibility dimension
RUNWAY-VISUAL-RANGE-OBSERVATION quality code

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 numeric characters (0-9).
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
9 = missing

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: 1

RUNWAY-VISUAL-RANGE-OBSERVATION quality code
The code that denotes a quality status of the reported RUNWAY-VISUAL-RANGE-OBSERVATION.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
9 = Passed gross limits check if element is present

Cloud and Solar Data

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 coverage quality code
SKY-COVER-LAYER base height dimension
SKY-COVER-LAYER base height quality code
SKY-COVER-LAYER cloud type code
SKY-COVER-LAYER cloud type quality 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.

Note: This is for a discrete cloud layer, as opposed to the cloud later summation data in the GD1-GD6 section.

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-COVER-LAYER coverage quality code

The code that denotes a quality status of the reported SKY-COVER-LAYER coverage.

DOM: A specific domain comprised of the characters in the ASCII character set.

0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous

9 = Passed gross limits check if element is present

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), a plus sign (+), and a minus sign (-).

+99999 = Missing

FLD LEN: 1

SKY-COVER-LAYER base height quality code

The code that denotes a quality status of the reported SKY-COVER-LAYER base height.

DOM: A specific domain comprised of the characters in the ASCII character set.

0 = Passed gross limits check

1 = Passed all quality control checks

2 = Suspect

3 = Erroneous

4 = Passed gross limits check , from NCDC SURFACE HOURLY

5 = Passed all quality control checks, from NCDC SURFACE HOURLY

6 = Suspect, from NCDC SURFACE HOURLY

7 = Erroneous, from NCDC SURFACE HOURLY

9 = Passed gross limits check if element is present

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: Altopcumulus (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 / sky obscured

11: Not used

12: Towering Cumulus (Tcu)

13: Stratus fractus (Stfra)

14: Stratocumulus Lenticular (Scsl)

15: Cumulus Fractus (Cufra)

16: Cumulonimbus Mammatus (Cbmam)

17: Altopcumulus Lenticular (Acsl)

18: Altopcumulus Castellanus (Accas)

19: Altopcumulus Mammatus (Acnam)

20: Cirrocumulus Lenticular (Ccsl)

21: Cirrus and/or Cirrocumulus

22: Stratus and/or Fracto-stratus

23: Cumulus and/or Fracto-cumulus

99: Missing

FLD LEN: 1

SKY-COVER-LAYER cloud type quality code

The code that denotes a quality status of the reported SKY-COVER-LAYER cloud type.

DOM: A specific domain comprised of the characters in the ASCII character set.

0 = Passed gross limits check

1 = Passed all quality control checks

2 = Suspect

3 = Erroneous

4 = Passed gross limits check , from NCDC SURFACE HOURLY

- 5 = Passed all quality control checks, from NCDC SURFACE HOURLY
- 6 = Suspect, from NCDC SURFACE HOURLY
- 7 = Erroneous, from NCDC SURFACE HOURLY
- 9 = Passed gross limits check if element is present

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 - GD6** An indicator of up to 6 repeating fields of the following items:
- SKY-COVER-SUMMATION-STATE coverage code
 - SKY-COVER-SUMMATION-STATE coverage code #2
 - SKY-COVER-SUMMATION-STATE coverage quality code
 - SKY-COVER-SUMMATION-STATE height dimension
 - SKY-COVER-SUMMATION-STATE height dimension quality code
 - 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: 2

SKY-COVER-SUMMATION coverage code #2

The code that denotes the fraction of the total celestial dome covered by a by all layers of clouds and other obscuring phenomena at or below a given height, if reported by the station in octas.

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
- 11: Thin Scattered
- 12: Scattered
- 13: Dark Scattered
- 14: Thin Broken
- 15: Broken
- 16: Dark Broken
- 17: Thin Overcast
- 18: Overcast
- 19: Dark overcast
- 99: Missing

FLD LEN: 1

SKY-COVER-SUMMATION-STATE coverage quality code

The code that denotes a quality status of the reported SKY-COVER-SUMMATION-STATE coverage.

DOM: A specific domain comprised of the characters in the ASCII character set.
0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
4 = Passed gross limits check , data originate from an NCDC data source
5 = Passed all quality control checks, data originate from an NCDC data source
6 = Suspect, data originate from an NCDC data source
7 = Erroneous, data originate from an NCDC data source
9 = Passed gross limits check if element is present

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 comprised of the ASCII characters 0-9, a plus (+) and a minus sign (-).
+99999 = Missing

FLD LEN: 1

SKY-COVER-SUMMATION-STATE height dimension quality code

The code that denotes a quality status of the reported SKY-COVER-SUMMATION-STATE height dimension.

DOM: A specific domain comprised of the characters in the ASCII character set.

- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 4 = Passed gross limits check , data originate from an NCDC data source
- 5 = Passed all quality control checks, data originate from an NCDC data source
- 6 = Suspect, data originate from an NCDC data source
- 7 = Erroneous, data originate from an NCDC data source
- 9 = Passed gross limits check if element is present

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
- 4: Dark layer (reported in data prior to 1950)
- 9: 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 total opaque 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
- 11: Thin scattered
- 12: Scattered
- 13: Dark scattered
- 14: Thin broken
- 15: Broken
- 16: Dark broken
- 17: Thin overcast
- 18: Overcast
- 19: Dark overcast
- 99: Missing

FLD LEN: 2

SKY-CONDITION-OBSERVATION total opaque coverage code

The code that denotes the fraction of the total celestial dome covered by opaque clouds or other obscuring phenomena. Only reported by selected U.S. stations during selected periods.

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
- 12: Scattered
- 13: Dark scattered
- 15: Broken
- 16: Dark broken
- 18: Overcast
- 19: Dark overcast
- 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 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 4 = Passed gross limits check , data originate from an NCDC data source
- 5 = Passed all quality control checks, data originate from an NCDC data source
- 6 = Suspect, data originate from an NCDC data source
- 7 = Erroneous, data originate from an NCDC data source
- 9 = Passed gross limits check if element is present

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
- 10: Partial obscuration
- 11: Thin Scattered
- 12: Scattered
- 13: Dark Scattered
- 14: Thin Broken
- 15: Broken
- 16: Dark Broken
- 17: Thin Overcast
- 18: Overcast
- 19: Dark overcast
- 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 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 4 = Passed gross limits check , data originate from an NCDC data source
- 5 = Passed all quality control checks, data originate from an NCDC data source
- 6 = Suspect, data originate from an NCDC data source
- 7 = Erroneous, data originate from an NCDC data source
- 9 = Passed gross limits check if element is present

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 humilis or Cumulus fractus other than of bad weather or both
- 02: Cumulus mediocris or congestus, with or without Cumulus of species fractus or humilis 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 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
4 = Passed gross limits check , data originate from an NCDC data source
5 = Passed all quality control checks, data originate from an NCDC data source
6 = Suspect, data originate from an NCDC data source
7 = Erroneous, data originate from an NCDC data source
9 = Passed gross limits check if element is present

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 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
4 = Passed gross limits check , data originate from an NCDC data source
5 = Passed all quality control checks, data originate from an NCDC data source
6 = Suspect, data originate from an NCDC data source
7 = Erroneous, data originate from an NCDC data source
9 = Passed gross limits check if element is present

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 cumulogenitus (or cumulonimbogenitus)
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 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
4 = Passed gross limits check , data originate from an NCDC data source

- 5 = Passed all quality control checks, data originate from an NCDC data source
- 6 = Suspect, data originate from an NCDC data source
- 7 = Erroneous, data originate from an NCDC data source
- 9 = Passed gross limits check if element is present

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 uncinus 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 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 4 = Passed gross limits check , data originate from an NCDC data source
- 5 = Passed all quality control checks, data originate from an NCDC data source
- 6 = Suspect, data originate from an NCDC data source
- 7 = Erroneous, data originate from an NCDC data source
- 9 = Passed gross limits check if element is present

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 coverage quality code
 - BELOW-STATION-CLOUD-LAYER top height dimension
 - BELOW-STATION-CLOUD-LAYER top height dimension quality code
 - BELOW-STATION-CLOUD-LAYER type code
 - BELOW-STATION-CLOUD-LAYER type quality code
 - BELOW-STATION-CLOUD-LAYER top code
 - BELOW-STATION-CLOUD-LAYER top quality 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: 1

BELOW-STATION-CLOUD-LAYER coverage quality code
The code that denotes a quality status of the reported BELOW-STATION-CLOUD-LAYER coverage.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
9 = Passed gross limits check if element is present

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: 1

BELOW-STATION-CLOUD-LAYER top height dimension quality code
The code that denotes a quality status of the reported BELOW-STATION-CLOUD-LAYER top height dimension.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
9 = Passed gross limits check if element is present

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: Alto cumulus (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: 1

BELOW-STATION-CLOUD-LAYER type quality code
The code that denotes a quality status of the reported BELOW-STATION-CLOUD-LAYER type.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = Passed gross limits check
1 = Passed all quality control checks

- 2 = Suspect
- 3 = Erroneous
- 9 = Passed gross limits check if element is present

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: 1

BELOW-STATION-CLOUD-LAYER top quality code

The code that denotes a quality status of the reported BELOW-STATION-CLOUD-LAYER top.

DOM: A specific domain comprised of the characters in the ASCII character set.

- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 9 = Passed gross limits check if element is present

FLD LEN: 3

Hourly Solar Radiation Section identifier

The identifier that indicates an hourly observation of solar radiation. This section appears in the last ISD record of the hour.

DOM: A specific domain comprised of the characters in the ASCII character set.

- GH1** An indicator of the following items:
- SOLARAD hourly average solar radiation
 - SOLARAD_QC quality code
 - SOLARAD_FLAG quality code
 - SOLARAD_MIN minimum solar radiation
 - SOLARAD_MIN_QC quality code
 - SOLARAD_MIN_FLAG quality code
 - SOLARAD_MAX maximum solar radiation
 - SOLARAD_MAX_QC quality code
 - SOLARAD_MAX_FLAG quality code
 - SOLARAD_STD solar radiation standard deviation
 - SOLARAD_STD_QC quality code
 - SOLARAD_STD_FLAG quality code

FLD LEN: 5

SOLARAD hourly average solar radiation

The hourly average solar radiation.

MIN: 0000 MAX: 99998 UNITS: watts per square meter

SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters (0-9).

99999 = Missing.

FLD LEN: 1

SOLARAD_QC quality code

The code that indicates ISD's evaluation of the quality status of the hourly average solar radiation.

DOM: A specific domain comprised of the numeric characters (0-9).
1 = Passed all quality control checks
3 = Failed all quality control checks
9 = Missing

FLD LEN: 1

SOLARAD_FLAG quality code

The code that indicates the network's internal evaluation of the quality status of the hourly average solar radiation. Most users will find the preceding quality code **SOLARAD_QC** to be the simplest and most useful quality indicator.

DOM: A specific domain comprised of the numeric characters (0-9).
0 = Passed all quality control checks
other – Did not pass all quality checks

FLD LEN: 5

SOLARAD_MIN minimum solar radiation

The minimum 10 second solar radiation for the hour.

MIN: 00000 MAX: 99998 UNITS: watts per square meter

SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters (0-9).
99999 = Missing.

FLD LEN: 1

SOLARAD_MIN_QC quality code

The code that indicates ISD's evaluation of the quality status of the hourly minimum solar radiation.

DOM: A specific domain comprised of the numeric characters (0-9).
1 = Passed all quality control checks
3 = Failed all quality control checks
9 = Missing

FLD LEN: 1

SOLARAD_MIN_FLAG quality code

The code that indicates the network's internal evaluation of the quality status of the hourly minimum solar radiation. Most users will find the preceding quality code **SOLARAD_MIN_QC** to be the simplest and most useful quality indicator.

DOM: A specific domain comprised of the numeric characters (0-9).
0 = Passed all quality control checks
other – Did not pass all quality checks

FLD LEN: 5

SOLARAD_MAX maximum solar radiation

The maximum 10 second solar radiation for the hour.

MIN: 00000 MAX: 99998 UNITS: watts per square meter

SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters (0-9).
99999 = Missing.

FLD LEN: 1

SOLARAD_MAX_QC quality code

The code that indicates ISD's evaluation of the quality status of the hourly maximum solar radiation.

DOM: A specific domain comprised of the numeric characters (0-9).
1 = Passed all quality control checks
3 = Failed all quality control checks
9 = Missing

FLD LEN: 1

SOLARAD_MAX_FLAG quality code

The code that indicates the network's internal evaluation of the quality status of the hourly maximum solar radiation. Most users will find the preceding quality code **SOLARAD_MAX_QC** to be the simplest and most useful quality indicator.

DOM: A specific domain comprised of the numeric characters (0-9).
0 = Passed all quality control checks
other – Did not pass all quality checks

FLD LEN: 5

SOLARAD_STD solar radiation standard deviation

The hourly 10 second hourly solar radiation standard deviation.

MIN: 00000 MAX: 99998

SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters (0-9).
99999 = Missing.

FLD LEN: 1

SOLARAD_STD_QC quality code

The code that indicates ISD's evaluation of the quality status of the hourly solar radiation standard deviation.

DOM: A specific domain comprised of the numeric characters (0-9).

1 = Passed all quality control checks

3 = Failed all quality control checks

9 = Missing

FLD LEN: 1

SOLARAD_STD_FLAG quality code

The code that indicates the network's internal evaluation of the quality status of hourly solar radiation standard deviation. Most users will find the preceding quality code **SOLARAD_STD_QC** to be the simplest and most useful quality indicator.

DOM: A specific domain comprised of the numeric characters (0-9).

0 = Passed all quality control checks

other – Did not pass all quality checks



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 An indicator of the occurrence of the following items:

SUNSHINE-OBSERVATION sunshine duration quantity

SUNSHINE-OBSERVATION sunshine duration quality code

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.
9999 = Missing

FLD LEN: 1

SUNSHINE-OBSERVATION sunshine duration quality code

The code that denotes a quality status of the reported SUNSHINE-OBSERVATION sunshine duration.

DOM: A specific domain comprised of the characters in the ASCII character set.

0 = Passed gross limits check

1 = Passed all quality control checks

2 = Suspect

3 = Erroneous

4 = Passed gross limits check , data originate from an NCDC data source

5 = Passed all quality control checks, data originate from an NCDC data source

6 = Suspect, data originate from an NCDC data source

7 = Erroneous, data originate from an NCDC data source

9 = Passed gross limits check if element is present

FLD LEN: 3

SUNSHINE-OBSERVATION identifier

The identifier that denotes the availability of percent of possible sunshine information.
DOM: A specific domain comprised of the ASCII characters

GK1 An indicator of the occurrence of the following items:
SUNSHINE-OBSERVATION percent of possible sunshine quantity
SUNSHINE-OBSERVATION percent of possible sunshine quality code

FLD LEN: 3

SUNSHINE-OBSERVATION percent of possible sunshine quantity

The percent of possible sunshine that occurred over the previous 24-hour period.

MIN: 000 MAX: 100 UNITS: percentage

DOM: A general domain comprised of the ASCII characters 0-9.
999 = Missing.

FLD LEN: 1

SUNSHINE-OBSERVATION percent of possible sunshine quality code

The code that denotes a quality status of the reported SUNSHINE-OBSERVATION percent of possible sunshine.

DOM: A specific domain comprised of the characters in the ASCII character set.

- 4 = Passed gross limits check, data originate from an NCDC data source
- 5 = Passed all quality control checks, data originate from an NCDC data source
- 6 = Suspect, data originate from an NCDC data source
- 7 = Erroneous, data originate from an NCDC data source
- 9 = Passed gross limits check if element is present

FLD LEN: 3

SUNSHINE-OBSERVATION FOR THE MONTH identifier

The identifier that denotes the availability of sunshine information.

DOM: A specific domain comprised of the ASCII characters

GL1 An indicator of the occurrence of the following items:
SUNSHINE-OBSERVATION sunshine duration quantity
SUNSHINE-OBSERVATION sunshine duration quality code

FLD LEN: 5

SUNSHINE-OBSERVATION FOR THE MONTH sunshine duration quantity

The quantity of time sunshine occurred over the reporting period.

MIN: 00000 MAX: 30000 UNITS: minutes

DOM: A general domain comprised of the ASCII characters 0-9.
99999 = Missing

FLD LEN: 1

SUNSHINE-OBSERVATION FOR THE MONTH sunshine duration quality code

The code that denotes a quality status of the reported SUNSHINE-OBSERVATION sunshine duration.

DOM: A specific domain comprised of the characters in the ASCII character set.

- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 4 = Passed gross limits check, data originate from an NCDC data source
- 5 = Passed all quality control checks, data originate from an NCDC data source
- 6 = Suspect, data originate from an NCDC data source
- 7 = Erroneous, data originate from an NCDC data source
- 9 = Passed gross limits check if element is present

FLD LEN: 3

Solar Irradiance Section identifier

The identifier that indicates an observation of solar irradiance data integrated over the specified time period.

DOM: A specific domain comprised of the characters in the ASCII character set.

GM1 An indicator of the following items:
Solar irradiance data time period

Global irradiance
Global irradiance data flag
Global irradiance quality code
Direct beam irradiance
Direct beam irradiance data flag
Direct beam irradiance quality code
Diffuse irradiance
Diffuse irradiance data flag
Diffuse irradiance quality code
UVB global irradiance
UVB global irradiance data flag
UVB global irradiance quality code

FLD LEN: 4

Time period in minutes, for which the data in this section (GM1) pertains—eg, 0060 = 60 minutes (1 hour).

MIN: 0001 MAX: 9998 UNITS: Minutes

DOM: A general domain comprised of the numeric characters (0-9).

9999 = Missing.

FLD LEN: 4

Global irradiance

Global horizontal irradiance measured using a pyranometer. Unit is watts per square meter (W/m²) in whole values. Waveband ranges from 0.4 - 2.3 micrometers.

MIN: 0000 MAX: 9998 UNITS: watts per square meter

SCALING FACTOR: 1

DOM: A general domain comprised of the numeric characters (0-9).

9999 = Missing.

FLD LEN: 2

Global irradiance data flag

The code that provides additional information regarding the global irradiance data.

DOM: A specific domain comprised of the numeric characters (00-99).

00 = Untested (raw data)

01 = Passed one-component test; data fall within max-min limits of K_t, K_n, or K_d

02 = Passed two-component test; data fall within 0.03 of the Gompertz boundaries

03 = Passed three-component test; data come within + 0.03 of satisfying K_t = K_n + K_d

04 = Passed visual inspection: not used by SERI_QC1

05 = Failed visual inspection: not used by SERI_QC1

06 = Value estimated; passes all pertinent SERI_QC tests

07 = Failed one-component test; lower than allowed minimum

08 = Failed one-component test; higher than allowed maximum

09 = Passed three-component test but failed two-component test by 0.05

10-93 = Failed two- or three- component tests in one of four ways.

94-97 = Data fails into physically impossible region where K_n > K_t by K-space distances of 0.05 to 0.10 (94), 0.10 to 0.15

(95), 0.15 to 0.20 (96), and > 0.20 (97).

98 = Not used

99 = Missing data

FLD LEN: 1

Global irradiance quality code

The code that denotes a quality status of the reported global irradiance value.

DOM: A specific domain comprised of the numeric characters (0-9).

0 = Passed gross limits check

1 = Passed all quality control checks

2 = Suspect

3 = Erroneous

9 = Missing

FLD LEN: 4**Direct beam irradiance**

Direct beam irradiance measured using a pyrheliometer or other instrument. Unit is watts per square meter (W/m²) in whole values. Waveband ranges from 0.4 - 2.3 micrometers.

MIN: 0000 MAX: 9998 UNITS: watts per square meter

SCALING FACTOR: 1

DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing.

FLD LEN: 2**Direct beam irradiance data flag**

The code that provides additional information regarding the direct beam irradiance data.

DOM: A specific domain comprised of the numeric characters (00-99).

00 = Untested (raw data)

01 = Passed one-component test; data fall within max-min limits of Kt, Kn, or Kd

02 = Passed two-component test; data fall within 0.03 of the Gompertz boundaries

03 = Passed three-component test; data come within + 0.03 of satisfying $K_t = K_n + K_d$

04 = Passed visual inspection: not used by SERI_QC1

05 = Failed visual inspection: not used by SERI_QC1

06 = Value estimated; passes all pertinent SERI_QC tests

07 = Failed one-component test; lower than allowed minimum

08 = Failed one-component test; higher than allowed maximum

09 = Passed three-component test but failed two-component test by 0.05

10-93 = Failed two- or three- component tests in one of four ways.

94-97 = Data fails into physically impossible region where $K_n > K_t$ by K-space distances of 0.05 to 0.10 (94), 0.10 to 0.15

(95), 0.15 to 0.20 (96), and > 0.20 (97).

98 = Not used

99 = Missing data

FLD LEN: 1**Direct beam irradiance quality code**

The code that denotes a quality status of the reported direct beam irradiance value.

DOM: A specific domain comprised of the numeric characters (0-9).

0 = Passed gross limits check

1 = Passed all quality control checks

2 = Suspect

3 = Erroneous

9 = Missing

FLD LEN: 4**Diffuse irradiance**

Diffuse irradiance measured using a pyranometer under a shading device. Unit is watts per square meter (W/m²) in whole values. Waveband ranges from 0.4 - 2.3 micrometers. Instrument is mounted under a shadowband.

MIN: 0000 MAX: 9998 UNITS: watts per square meter

SCALING FACTOR: 1

DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing.

FLD LEN: 2**Diffuse irradiance data flag**

The code that provides additional information regarding the diffuse irradiance data.

DOM: A specific domain comprised of the numeric characters (00-99).

00 = Untested (raw data)

01 = Passed one-component test; data fall within max-min limits of Kt, Kn, or Kd

02 = Passed two-component test; data fall within 0.03 of the Gompertz boundaries

03 = Passed three-component test; data come within + 0.03 of

satisfying $K_t = K_n + K_d$
 04 = Passed visual inspection: not used by SERI_QC1
 05 = Failed visual inspection: not used by SERI_QC1
 06 = Value estimated; passes all pertinent SERI_QC tests
 07 = Failed one-component test; lower than allowed minimum
 08 = Failed one-component test; higher than allowed maximum
 09 = Passed three-component test but failed two-component test by 0.05
 10-93 = Failed two- or three- component tests in one of four ways.
 94-97 = Data fails into physically impossible region where $K_n > K_t$ by K-space distances of 0.05 to 0.10 (94), 0.10 to 0.15 (95), 0.15 to 0.20 (96), and > 0.20 (97).
 98 = Not used
 99 = Missing data

FLD LEN: 1

Diffuse irradiance quality code

The code that denotes a quality status of the reported diffuse irradiance value.

DOM: A specific domain comprised of the numeric characters (0-9).

- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 9 = Missing

FLD LEN: 4

UVB global irradiance

Ultra-violet global irradiance measured using a Ultra-violet Biometer (Solar Light). Unit is milli-watts per square meter (mW/m²) of erythema effective irradiance in whole values. Waveband ranges from 290-320 nanometers.

MIN: 0000 MAX: 9998 UNITS: milli-watts per square meter

SCALING FACTOR: 1

DOM: A general domain comprised of the numeric characters (0-9).

9999 = Missing.

FLD LEN: 1

UVB global irradiance quality code

The code that denotes a quality status of the reported UVB global irradiance value.

DOM: A specific domain comprised of the numeric characters (0-9).

- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 9 = Missing

FLD LEN: 3

Solar Radiation Section identifier

The identifier that indicates an observation of solar radiation data.

DOM: A specific domain comprised of the characters in the ASCII character set.

- GN1** An indicator of the following items:
- Solar radiation data time period
 - Upwelling global solar radiation
 - Upwelling global solar radiation quality code
 - Downwelling thermal infrared radiation
 - Downwelling thermal infrared radiation quality code
 - Upwelling thermal infrared radiation
 - Upwelling thermal infrared radiation quality code
 - Photosynthetically active radiation
 - Photosynthetically active radiation quality code
 - Solar zenith angle
 - Solar zenith angle quality code

FLD LEN: 4

Time period in minutes, for which the data in this section (GN1) pertains—eg, 0060 = 60 minutes (1 hour).

MIN: 0001 MAX: 9998 UNITS: Minutes

DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing.

FLD LEN: 4**Upwelling global solar radiation**

Global radiation measured using an Epply Precision Spectral Pyranometer mounted upside down ten meters above the surface on a meteorological tower. Unit is milli-watts per square meter (mW/m²). Waveband ranges from 270 to 3000 nanometers.

MIN: 0000 MAX: 9998 UNITS: milli-watts per square meter

SCALING FACTOR: 1

DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing.

FLD LEN: 1**Upwelling global solar radiation quality code**

The code that denotes a quality status of the reported upwelling global solar radiation value.

DOM: A specific domain comprised of the numeric characters (0-9).

- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 9 = Missing

FLD LEN: 4**Downwelling thermal infrared radiation**

Infrared radiation measured using an Epply Precision Infrared Radiometer mounted upright ten meters above the surface on a meteorological tower. Unit is milli-watts per square meter (mW/m²). Waveband ranges from 3000 to 50,000 nanometers.

MIN: 0000 MAX: 9998 UNITS: milli-watts per square meter

SCALING FACTOR: 1

DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing.

FLD LEN: 1**Downwelling thermal infrared radiation quality code**

The code that denotes a quality status of the reported downwelling thermal infrared radiation value.

DOM: A specific domain comprised of the numeric characters (0-9).

- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 9 = Missing

FLD LEN: 4**Upwelling thermal infrared radiation**

Infrared radiation measured using an Epply Precision Infrared Radiometer mounted upside-down ten meters above the surface on a meteorological tower. Unit is Watts per meter per meter (mW/m²). Waveband ranges from 3000 to 50,000 nanometers.

MIN: 0000 MAX: 9998 UNITS: watts per square meter

SCALING FACTOR: 1

DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing.

FLD LEN: 1**Upwelling thermal infrared radiation quality code**

The code that denotes a quality status of the reported upwelling thermal infrared radiation value.

DOM: A specific domain comprised of the numeric characters (0-9).

- 0 = Passed gross limits check
- 1 = Passed all quality control checks

2 = Suspect
3 = Erroneous
9 = Missing

FLD LEN: 4

Photosynthetically active radiation

The PAR sensor measures global solar radiation from 400 to 700 nm in Watts per square meter (mW/m²), which approximates the spectral band active in photosynthesis.

MIN: 0000 MAX: 9998 UNITS: watts per square meter

SCALING FACTOR: 1

DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing.

FLD LEN: 1

Photosynthetically active radiation quality code

The code that denotes a quality status of the reported photosynthetically active radiation value.

DOM: A specific domain comprised of the numeric characters (0-9).

0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
9 = Missing

FLD LEN: 3

Solar zenith angle

The Solar Zenith Angle is the angle in degrees between the sun and the perpendicular to the earth's surface. At sunrise it is 90 degrees, at noon it is a function of latitude, and at sunset it is again 90 degrees. Below the horizon value is 100. Values are reported to the nearest tens of degrees (eg, 090).

MIN: 000 MAX: 998 UNITS: angular degrees

SCALING FACTOR: 1

DOM: A general domain comprised of the numeric characters (0-9).
999 = Missing.

FLD LEN: 1

Solar zenith angle quality code

The code that denotes a quality status of the reported solar zenith angle value.

DOM: A specific domain comprised of the numeric characters (0-9).

0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
9 = Missing



FLD LEN: 3

Net Solar Radiation Section identifier

The identifier that indicates an observation of net solar radiation data.

DOM: A specific domain comprised of the characters in the ASCII character set.

GO1 An indicator of the following items:
Net solar radiation data time period
Net solar radiation
Net solar radiation quality code
Net infrared radiation
Net infrared radiation quality code
Net radiation
Net radiation quality code

FLD LEN: 4

Time period in minutes, for which the data in this section (GO1) pertains—eg, 0060 = 60 minutes (1 hour).

MIN: 0001 MAX: 9998 UNITS: Minutes

DOM: A general domain comprised of the numeric characters (0-9).

9999 = Missing.

FLD LEN: 4

Net solar radiation

The difference between global radiation and upwelling global radiation measured in Watts per square meter (W/m²). If negative, left most position contains a "-" sign.

MIN: -999 MAX: 9999 UNITS: watts per square meter

SCALING FACTOR: 1

DOM: A general domain comprised of the numeric characters (0-9).

9999 = Missing.

FLD LEN: 1

Net solar radiation quality code

The code that denotes a quality status of the reported net solar radiation value.

DOM: A specific domain comprised of the numeric characters (0-9).

- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 9 = Missing

FLD LEN: 4

Net infrared radiation

The difference between downwelling infrared and upwelling infrared measured in Watts per square meter (W/m²). If negative, left most position contains a "-" sign.

MIN: -999 MAX: 9998 UNITS: watts per square meter

SCALING FACTOR: 1

DOM: A general domain comprised of the numeric characters (0-9).

9999 = Missing.

FLD LEN: 1

Net infrared radiation quality code

The code that denotes a quality status of the reported net infrared radiation value.

DOM: A specific domain comprised of the numeric characters (0-9).

- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 9 = Missing

FLD LEN: 4

Net radiation

The total of Net Solar and Net Infrared radiation measured in Watts per square meter (W/m²).

MIN: -999 MAX: 9998 UNITS: watts per square meter

SCALING FACTOR: 1

DOM: A general domain comprised of the numeric characters (0-9).

9999 = Missing.

FLD LEN: 1

Net radiation quality code

The code that denotes a quality status of the reported net radiation value.

DOM: A specific domain comprised of the numeric characters (0-9).

- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 9 = Missing

FLD LEN: 3

Modeled Solar Irradiance Section identifier

The identifier that indicates modeled broadband solar irradiance data integrated over the specified time period.

DOM: A specific domain comprised of the characters in the ASCII character set.

GP1 An indicator of the following items:
Modeled solar irradiance data time period
Modeled global horizontal
Modeled global horizontal source flag
Modeled global horizontal uncertainty
Modeled direct normal
Modeled direct normal source flag
Modeled direct normal uncertainty
Modeled diffuse horizontal
Modeled diffuse horizontal source flag
Modeled diffuse horizontal uncertainty

FLD LEN: 4

Time period in minutes, for which the data in this section pertains—eg, 0060 = 60 minutes (1 hour).

MIN: 0001 MAX: 9998 UNITS: Minutes

DOM: A general domain comprised of the numeric characters (0-9).

9999 = Missing.

FLD LEN: 4

Modeled global horizontal

Total amount of direct and diffuse solar radiation (modeled) received on a horizontal surface. Unit is watts per square meter (W/m²) in whole values.

MIN: 0000 MAX: 9998 UNITS: watts per square meter

SCALING FACTOR: 1

DOM: A general domain comprised of the numeric characters (0-9).

9999 = Missing.

FLD LEN: 2

Modeled global horizontal source flag

The code that provides source information regarding the global horizontal data.

DOM: A specific domain comprised of the numeric characters (00-99).

01 = Value modeled from METSTAT model

02 = Value time-shifted from SUNY satellite model

03 = Value time-shifted from SUNY satellite model, adjusted to a minimum low-diffuse envelope

99 = Missing data

FLD LEN: 3

Modeled global horizontal uncertainty

The uncertainty values are based on model type and quality of input data.

MIN: 000 MAX: 100 UNITS: Percent

SCALING FACTOR: 1

DOM: A general domain comprised of the numeric characters (0-9).

999 = Missing data

FLD LEN: 4

Modeled direct normal

The amount of solar radiation (modeled) on a surface normal to the sun. Unit is watts per square meter (W/m²) in whole values.

MIN: 0000 MAX: 9998 UNITS: watts per square meter

SCALING FACTOR: 1

DOM: A general domain comprised of the numeric characters (0-9).

9999 = Missing.

FLD LEN: 2

Modeled direct normal source flag

The code that provides source information regarding the direct normal data.

DOM: A specific domain comprised of the numeric characters (00-99).

01 = Value modeled from METSTAT model

02 = Value time-shifted from SUNY satellite model

03 = Value time-shifted from SUNY satellite model, adjusted to a minimum low-diffuse envelope

99 = Missing data

FLD LEN: 3

Modeled direct normal uncertainty

The uncertainty values are based on model type and quality of input data.

MIN: 000 MAX: 100 UNITS: Percent

SCALING FACTOR: 1

DOM: A general domain comprised of the numeric characters (0-9).

999 = Missing data

FLD LEN: 4

Modeled diffuse horizontal

The amount of solar radiation (modeled) received from the sky (excluding the solar disk) on a horizontal surface.

Unit is watts per square meter (W/m²) in whole values. Waveband ranges from 0.4 - 2.3 micrometers.

MIN: 0000 MAX: 9998 UNITS: watts per square meter

SCALING FACTOR: 1

DOM: A general domain comprised of the numeric characters (0-9).

9999 = Missing.

FLD LEN: 2

Modeled diffuse horizontal source flag

The code that provides source information regarding the diffuse horizontal data.

DOM: A specific domain comprised of the numeric characters (00-99).

01 = Value modeled from METSTAT model

02 = Value time-shifted from SUNY satellite model

03 = Value time-shifted from SUNY satellite model, adjusted to a minimum low-diffuse envelope

99 = Missing data

FLD LEN: 3

Modeled diffuse horizontal uncertainty

The uncertainty values are based on model type and quality of input data.

MIN: 000 MAX: 100 UNITS: Percent

SCALING FACTOR: 1

DOM: A general domain comprised of the numeric characters (0-9)

999 = Missing data

FLD LEN: 3

Hourly Solar Angle Section identifier

The identifier that denotes the start of the Hourly Solar angle data section.

DOM: A specific domain comprised of the characters in the ASCII character set.

GQ1 An indicator of the occurrence of the following items:

Hourly solar angle time period

Hourly mean zenith angle

Hourly mean zenith angle quality code

Hourly mean azimuth angle

Hourly mean azimuth angle quality code

FLD LEN: 4

Time period in minutes, for which the data in this section pertains—eg, 0060 = 60 minutes (1 hour).

MIN: 0001 MAX: 9998 UNITS: Minutes

DOM: A general domain comprised of the numeric characters (0-9).

9999 = Missing data

FLD LEN: 4

Hourly mean zenith angle (for sunup periods)

The angle between sun and the zenith as the mean of all 1-minute sunup zenith angle values.

MIN: 0000 MAX: 3600 UNITS: Angular Degrees

SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters (0-9).

9999 = Missing data

FLD LEN: 1

Hourly mean zenith angle quality code

The code that denotes a quality status of the hourly mean zenith angle.

DOM: A specific domain comprised of the numeric characters (0-9).

- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 9 = Missing

FLD LEN: 4

Hourly mean azimuth angle (for sunup periods)

The angle between sun and north as the mean of all 1-minute sunup azimuth angle values.

MIN: 0000 MAX: 3600 UNITS: Angular Degrees

SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters (0-9).

9999 = Missing data

FLD LEN: 1

Hourly mean azimuth angle quality code

The code that denotes a quality status of the hourly mean azimuth angle.

DOM: A specific domain comprised of the numeric characters (0-9).

- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 9 = Missing

FLD LEN: 3

Hourly Extraterrestrial Radiation Section identifier

The identifier that denotes the start of the Hourly Extraterrestrial radiation data section.

DOM: A specific domain comprised of the characters in the ASCII character set.

GR1 An indicator of the occurrence of the following items:

- Hourly extraterrestrial radiation time period
- Hourly extraterrestrial radiation on a horizontal surface
- Hourly extraterrestrial radiation on a horizontal surface quality code
- Hourly extraterrestrial radiation normal to the sun
- Hourly extraterrestrial radiation normal to the sun quality code

FLD LEN: 4

Time period in minutes, for which the data in this section pertains—eg, 0060 = 60 minutes (1 hour).

MIN: 0001 MAX: 9998 UNITS: Minutes

SCALING FACTOR: 1

DOM: A general domain comprised of the numeric characters (0-9).

9999 = Missing data

FLD LEN: 4

Hourly extraterrestrial radiation on a horizontal surface

The amount of solar radiation received (modeled) on a horizontal surface at the top of the atmosphere. Unit is watts per square meter (W/m²) in whole values.

MIN: 0000 MAX: 9998 UNITS: watts per square meter

SCALING FACTOR: 1

DOM: A general domain comprised of the numeric characters (0-9).

9999 = Missing data

FLD LEN: 1

Hourly extraterrestrial radiation on a horizontal surface quality code

The code that denotes a quality status of the hourly extraterrestrial radiation on a horizontal surface value .

DOM: A specific domain comprised of the numeric characters (0-9).

- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect

3 = Erroneous
9 = Missing

FLD LEN: 4

Hourly extraterrestrial radiation normal to the sun

The amount of solar radiation received (modeled) on a surface normal to the sun at the top of the atmosphere. Unit is watts per square meter (W/m²) in whole values.

MIN: 0000 MAX: 9998 UNITS: watts per square meter

SCALING FACTOR: 1

DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing data

FLD LEN: 1

Hourly extraterrestrial radiation normal to the sun quality code

The code that denotes a quality status of the hourly extraterrestrial radiation normal to the sun value.

DOM: A specific domain comprised of the numeric characters (0-9).

0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
9 = Missing

Hail Data

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 size
Hail size quality code

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)
999 = missing

FLD LEN: 1

HAIL size quality code

The code that denotes a quality status of the reported HAIL size.

DOM: A specific domain comprised of the characters in the ASCII character set.

0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
9 = Passed gross limits check if element is present

Ground Surface Data

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
GROUND-SURFACE-OBSERVATION quality 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
- 99: Missing

FLD LEN: 1

GROUND-SURFACE-OBSERVATION code quality code

The code that denotes a quality status of the reported GROUND-SURFACE-OBSERVATION code.

DOM: A specific domain comprised of the characters in the ASCII character set.

- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 9 = Passed gross limits check if element is present

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
- GROUND-SURFACE-OBSERVATION minimum temperature quality code

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(-).

+9999 = Missing

FLD LEN: 1

GROUND-SURFACE-OBSERVATION minimum temperature quality code

The code that denotes a quality status of the reported GROUND-SURFACE-OBSERVATION minimum temperature.

DOM: A specific domain comprised of the characters in the ASCII character set.

- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 9 = Passed gross limits check if element is present

FLD LEN: 3

Hourly Surface Temperature Section identifier

The identifier that indicates an hourly observation of surface temperature as measured by a radiation sensor for the ground surface. This section appears in the last ISD record of the hour.

DOM: A specific domain comprised of the characters in the ASCII character set.

IB1 An indicator of the following items:

- SURFTEMP hourly average surface temperature
- SURFTEMP_QC quality code
- SURFTEMP_FLAG quality code
- SURFTEMP_MIN minimum surface temperature
- SURFTEMP_MIN_QC quality code
- SURFTEMP_MIN_FLAG quality code
- SURFTEMP_MAX maximum surface temperature
- SURFTEMP_MAX_QC quality code

SURFTEMP_MAX_FLAG quality code
SURFTEMP_STD surface temperature standard deviation for the hour
SURFTEMP_STD_QC quality code
SURFTEMP_STD_FLAG quality code

FLD LEN: 5

SURFTEMP hourly average surface temperature

The hourly average surface temperature.

MIN: -9999 MAX: +9998 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: 1

SURFTEMP_QC quality code

The code that indicates ISD's evaluation of the quality status of the hourly average surface temperature.

DOM: A specific domain comprised of the numeric characters (0-9).

1 = Passed all quality control checks

3 = Failed all quality control checks

9 = Missing

FLD LEN: 1

SURFTEMP_FLAG quality code

The code that indicates the network's internal evaluation of the quality status of the hourly average surface temperature.

Most users will find the preceding quality code **SURFTEMP_QC** to be the simplest and most useful quality indicator.

DOM: A specific domain comprised of the numeric characters (0-9).

0 = Passed all quality control checks

other – Did not pass all quality checks

FLD LEN: 5

SURFTEMP_MIN hourly minimum surface temperature

The minimum 10 second surface temperature for the hour.

MIN: -9999 MAX: +9998 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: 1

SURFTEMP_MIN_QC quality code

The code that indicates ISD's evaluation of the quality status of the hourly minimum surface temperature.

DOM: A specific domain comprised of the numeric characters (0-9).

1 = Passed all quality control checks

3 = Failed all quality control checks

9 = Missing

FLD LEN: 1

SURFTEMP_MIN_FLAG quality code

The code that indicates the network's internal evaluation of the quality status of the hourly minimum surface temperature.

Most users will find the preceding quality code **SURFTEMP_MIN_QC** to be the simplest and most useful quality indicator.

DOM: A specific domain comprised of the numeric characters (0-9).

0 = Passed all quality control checks

other – Did not pass all quality checks

FLD LEN: 5

SURFTEMP_MAX hourly maximum surface temperature

The maximum 10 second surface temperature for the hour.

MIN: -9999 MAX: +9998 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: 1

SURFTEMP_MAX_QC quality code

The code that indicates ISD's evaluation of the quality status of the hourly maximum surface temperature.

DOM: A specific domain comprised of the numeric characters (0-9).

- 1 = Passed all quality control checks
- 3 = Failed all quality control checks
- 9 = Missing

FLD LEN: 1

SURFTEMP_MAX_FLAG quality code

The code that indicates the network's internal evaluation of the quality status of the hourly maximum surface temperature. Most users will find the preceding quality code **SURFTEMP_MAX_QC** to be the simplest and most useful quality indicator.

DOM: A specific domain comprised of the numeric characters (0-9).

- 0 = Passed all quality control checks
- other – Did not pass all quality checks

FLD LEN: 4

SURFTEMP_STD hourly surface temperature standard deviation

The hourly surface temperature standard deviation.

MIN: 0000 MAX: 9998

SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters (0-9).

9999 = Missing.

FLD LEN: 1

SURFTEMP_STD_QC quality code

The code that indicates ISD's evaluation of the quality status of the hourly surface temperature standard deviation.

DOM: A specific domain comprised of the numeric characters (0-9).

- 1 = Passed all quality control checks
- 3 = Failed all quality control checks
- 9 = Missing

FLD LEN: 1

SURFTEMP_STD_FLAG quality code

The code that indicates the network's internal evaluation of the quality status of hourly surface temperature standard deviation. Most users will find the preceding quality code **SURFTEMP_STD_QC** to be the simplest and most useful quality indicator.

DOM: A specific domain comprised of the numeric characters (0-9).

- 0 = Passed all quality control checks
- other – Did not pass all quality checks

FLD LEN: 3

Hourly Surface Temperature Sensor Section identifier

The identifier that indicates an hourly observation of the equipment temperature for the sensor used to measure ground surface temperature. This section appears in the last ISD record of the hour.

DOM: A specific domain comprised of the characters in the ASCII character set.

IB2 An indicator of the following items:

- SURFTEMP_SB equipment temperature
- SURFTEMP_SB_QC quality code
- SURFTEMP_SB_FLAG quality code
- SURFTEMP_SB_STD equipment temperature standard deviation for the hour
- SURFTEMP_SB_STD_QC quality code
- SURFTEMP_SB_STD_FLAG quality code

FLD LEN: 5

SURFTEMP_SB equipment temperature

The average temperature of the surface temperature sensor housing (sensor body) for the hour.

MIN: -9999 MAX: +9998 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: 1

SURFTEMP_SB_QC quality code
The code that indicates ISD's evaluation of the quality status of the surface temperature sensor housing temperature.
DOM: A specific domain comprised of the numeric characters (0-9).
1 = Passed all quality control checks
3 = Failed all quality control checks
9 = Missing

FLD LEN: 1

SURFTEMP_SB_FLAG quality code
The code that indicates the network's internal evaluation of the quality status of the surface temperature sensor housing temperature. Most users will find the preceding quality code **SURFTEMP_SB_QC** to be the simplest and most useful quality indicator.
DOM: A specific domain comprised of the numeric characters (0-9).
0 = Passed all quality control checks
other – Did not pass all quality checks

FLD LEN: 4

SURFTEMP_SB_STD hourly sensor housing temperature standard deviation for the hour
The hourly 10 second hourly surface temperature standard deviation.
MIN: 0000 MAX: 9998
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing.

FLD LEN: 1

SURFTEMP_SB_STD_QC quality code
The code that indicates ISD's evaluation of the quality status of the hourly sensor housing temperature standard deviation.
DOM: A specific domain comprised of the numeric characters (0-9).
1 = Passed all quality control checks
3 = Failed all quality control checks
9 = Missing

FLD LEN: 1

SURFTEMP_SB_STD_FLAG quality code
The code that indicates the network's internal evaluation of the quality status of sensor housing temperature standard deviation.. Most users will find the preceding quality code **SURFTEMP_SB_STD_QC** to be the simplest and most useful quality indicator.
DOM: A specific domain comprised of the numeric characters (0-9).
0 = Passed all quality control checks
other – Did not pass all quality checks

FLD LEN: 3

GROUND-SURFACE-OBSERVATION pan evaporation data identifier
The identifier that denotes the availability of GROUND-SURFACE-OBSERVATION evaporation data.
DOM: A specific domain comprised of the characters in the ASCII character set.
IC1: An indicator of the occurrence of the following data item:
GROUND-SURFACE-OBSERVATION time period in hours
GROUND-SURFACE-OBSERVATION wind movement
GROUND-SURFACE-OBSERVATION wind movement condition code
GROUND-SURFACE-OBSERVATION wind movement quality code
GROUND-SURFACE-OBSERVATION evaporation data
GROUND-SURFACE-OBSERVATION evaporation condition code

GROUND-SURFACE-OBSERVATION evaporation quality code
GROUND-SURFACE-OBSERVATION maximum pan water temperature
GROUND-SURFACE-OBSERVATION maximum water temperature condition code
GROUND-SURFACE-OBSERVATION maximum water temperature quality code
GROUND-SURFACE-OBSERVATION minimum pan water temperature
GROUND-SURFACE-OBSERVATION minimum water temperature condition code
GROUND-SURFACE-OBSERVATION minimum water temperature quality code

FLD LEN: 2

GROUND-SURFACE-OBSERVATION time period in hours
The quantity of time over which the evaporation and related data were sampled.
MIN: 01 MAX: 98 UNITS: hours
SCALING FACTOR: 1
DOM: A general domain comprised of the numeric characters (0-9).
99 = Missing

FLD LEN: 4

GROUND-SURFACE-OBSERVATION wind movement
The wind movement over the evaporation pan during the time period of the observation.
MIN: 0000 MAX: 9998 UNITS: Statute Miles
SCALING FACTOR: 1
DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing

FLD LEN: 1

GROUND-SURFACE-OBSERVATION wind movement condition code
The code that denotes certain conditions or flags which describe the data.
DOM: A specific domain comprised of the characters in the ASCII character set.
1: No special conditions
2: Data will be included in subsequent observation
3: Data are accumulated from previous observation(s), so cover a longer than typical time period
9: Missing

FLD LEN: 1

GROUND-SURFACE-OBSERVATION wind movement quality code
The code that denotes a quality status of the reported wind movement data.
DOM: A specific domain comprised of the characters in the ASCII character set.
4 = Passed gross limits check, from NCDC Data source
5 = Passed all quality control checks, from NCDC Data source
6 = Suspect, from NCDC Data source
7 = Erroneous, from NCDC Data source
9 = Passed gross limits check if element is present

FLD LEN: 3

GROUND-SURFACE-OBSERVATION evaporation data
The total evaporation which was measured during the time period of the observation.
MIN: 000 MAX: 998 UNITS: Inches
SCALING FACTOR: 100
DOM: A general domain comprised of the numeric characters (0-9).
999 = Missing

FLD LEN: 1

GROUND-SURFACE-OBSERVATION evaporation condition code
The code that denotes certain conditions or flags which describe the data.
DOM: A specific domain comprised of the characters in the ASCII character set.
1: No special conditions
2: Data will be included in subsequent observation
3: Data are accumulated from previous observation(s), so cover a longer than typical time period
9: Missing

FLD LEN: 1

GROUND-SURFACE-OBSERVATION evaporation quality code
The code that denotes a quality status of the reported evaporation data.
DOM: A specific domain comprised of the characters in the ASCII character set.

- 4 = Passed gross limits check, from NCDC Data source
- 5 = Passed all quality control checks, from NCDC Data source
- 6 = Suspect, from NCDC Data source
- 7 = Erroneous, from NCDC Data source
- 9 = Passed gross limits check if element is present

FLD LEN: 4

GROUND-SURFACE-OBSERVATION maximum pan water temperature
 The maximum temperature in the evaporation pan during the time period of the observation.
 MIN: -100 MAX: +500 UNITS: Degrees Celsius
 SCALING FACTOR: 10
 DOM: A general domain comprised of the numeric characters (0-9), as a signed field.
 +999 = Missing

FLD LEN: 1

GROUND-SURFACE-OBSERVATION maximum pan water temperature condition code
 The code that denotes certain conditions or flags which describe the data.
 DOM: A specific domain comprised of the characters in the ASCII character set.
 1: No special conditions
 2: Data will be included in subsequent observation
 3: Data are accumulated from previous observation(s), so cover a longer than typical time period
 9: Missing

FLD LEN: 1

GROUND-SURFACE-OBSERVATION maximum pan water temperature quality code
 The code that denotes a quality status of the reported maximum water temperature data.
 DOM: A specific domain comprised of the characters in the ASCII character set.
 4 = Passed gross limits check, from NCDC Data source
 5 = Passed all quality control checks, from NCDC Data source
 6 = Suspect, from NCDC Data source
 7 = Erroneous, from NCDC Data source
 9 = Passed gross limits check if element is present

FLD LEN: 4

GROUND-SURFACE-OBSERVATION minimum pan water temperature
 The maximum temperature in the evaporation pan during the time period of the observation.
 MIN: -100 MAX: +500 UNITS: Degrees Celsius
 SCALING FACTOR: 10
 DOM: A general domain comprised of the numeric characters (0-9), as a signed field.
 +999 = Missing

FLD LEN: 1

GROUND-SURFACE-OBSERVATION minimum pan water temperature condition code
 The code that denotes certain conditions or flags which describe the data.
 DOM: A specific domain comprised of the characters in the ASCII character set.
 1: No special conditions
 2: Data will be included in subsequent observation
 3: Data are accumulated from previous observation(s), so cover a longer than typical time period
 9: Missing

FLD LEN: 1

GROUND-SURFACE-OBSERVATION minimum pan water temperature quality code
 The code that denotes a quality status of the reported minimum water temperature data.
 DOM: A specific domain comprised of the characters in the ASCII character set.
 4 = Passed gross limits check, from NCDC Data source
 5 = Passed all quality control checks, from NCDC Data source
 6 = Suspect, from NCDC Data source
 7 = Erroneous, from NCDC Data source
 9 = Passed gross limits check if element is present

Temperature Data

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

EXTREME-AIR-TEMPERATURE temperature quality code

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 numeric characters (0-9)

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

O: Estimated minimum temperature

P: Estimated 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: -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

FLD LEN: 1

EXTREME-AIR-TEMPERATURE temperature quality code

The code that denotes a quality status of the reported EXTREME-AIR-TEMPERATURE temperature.

DOM: A specific domain comprised of the characters in the ASCII character set.

0 = Passed gross limits check

1 = Passed all quality control checks

2 = Suspect

3 = Erroneous

4 = Passed gross limits check, data originate from an NCDC data source

5 = Passed all quality control checks, data originate from an NCDC data source

6 = Suspect, data originate from an NCDC data source

7 = Erroneous, data originate from an NCDC data source

9 = Passed gross limits check if element is present

FLD LEN: 3

AVERAGE-AIR-TEMPERATURE identifier

The identifier that denotes the start of an AVERAGE-AIR-TEMPERATURE data section.

DOM: A specific domain comprised of the characters in the ASCII character set.

KB1-KB3 An indicator of up to 3 repeating fields for the following items:

AVERAGE-AIR-TEMPERATURE period quantity

AVERAGE-AIR-TEMPERATURE type code

AVERAGE-AIR-TEMPERATURE air temperature

AVERAGE-AIR-TEMPERATURE temperature quality code

FLD LEN: 3

AVERAGE-AIR-TEMPERATURE period quantity

The quantity of time over which temperatures were sampled to determine the AVERAGE-AIR-TEMPERATURE.

MIN: 001 MAX: 744 UNITS: Hours

SCALING FACTOR: 1

DOM: A general domain comprised of the numeric characters (0-9)
999 = Missing

FLD LEN: 1

AVERAGE-AIR-TEMPERATURE code

The code that denotes an AVERAGE-AIR-TEMPERATURE as a mean, an average maximum, or an average minimum.

DOM: A specific domain comprised of the characters in the ASCII character set.

N: Minimum temperature average

M: Maximum temperature average

A: Mean temperature

9: Missing

FLD LEN: 5

AVERAGE-AIR-TEMPERATURE temperature

The mean air temperature for a given period, typically for the day or month, as reported by the station (ie, not derived from other data fields).

MIN: -9900 MAX: +6300 UNITS: Degrees Celsius

SCALING FACTOR: 100

DOM: A general domain comprised of the numeric characters (0-9), a plus sign (+), and a minus sign (-).
+9999 = Missing

FLD LEN: 1

AVERAGE-AIR-TEMPERATURE temperature quality code

The code that denotes a quality status of the reported AVERAGE-AIR-TEMPERATURE temperature.

DOM: A specific domain comprised of the characters in the ASCII character set.

0 = Passed gross limits check

1 = Passed all quality control checks

2 = Suspect

3 = Erroneous

4 = Passed gross limits check, data originate from an NCDC data source

5 = Passed all quality control checks, data originate from an NCDC data source

6 = Suspect, data originate from an NCDC data source

7 = Erroneous, data originate from an NCDC data source

9 = Passed gross limits check if element is present

FLD LEN: 3

EXTREME AIR-TEMPERATURE FOR THE MONTH 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.

KC1-KC2 An indicator of up to 2 repeating fields for the following items:

EXTREME AIR-TEMPERATURE code

EXTREME AIR-TEMPERATURE condition code

EXTREME AIR-TEMPERATURE temperature

EXTREME AIR-TEMPERATURE date of occurrence

EXTREME AIR-TEMPERATURE temperature quality code

FLD LEN: 1

EXTREME AIR-TEMPERATURE FOR THE MONTH code

The code that denotes an EXTREME AIR-TEMPERATURE FOR THE MONTH 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: 1

EXTREME AIR-TEMPERATURE FOR THE MONTH condition code

The code for **EXTREME AIR-TEMPERATURE FOR THE MONTH**

DOM: A specific domain comprised of the characters in the ASCII character set.

1: The value occurred on other dates in addition to those listed

9: Missing (N/A)

FLD LEN: 5

EXTREME AIR-TEMPERATURE FOR THE MONTH temperature

The extremes air temperature for the month, as reported by the station (ie, not derived from other data fields).

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: 6

EXTREME AIR-TEMPERATURE FOR THE MONTH dates of occurrence

The dates of occurrence of **EXTREME AIR-TEMPERATURE**, given as the date for each occurrence, for up to 3 occurrences; e.g., 041016 indicates days 04, 10, and 16.

MIN: 01 MAX: 31

DOM: A general domain comprised of the numeric characters (0-9).

99 = missing for each of the 3 sub-fields.

FLD LEN: 1

EXTREME AIR-TEMPERATURE FOR THE MONTH temperature quality code

The code that denotes a quality status of the reported **EXTREME AIR-TEMPERATURE FOR THE MONTH**.

DOM: A specific domain comprised of the characters in the ASCII character set.

0 = Passed gross limits check

1 = Passed all quality control checks

2 = Suspect

3 = Erroneous

4 = Passed gross limits check, data originate from an NCDC data source

5 = Passed all quality control checks, data originate from an NCDC data source

6 = Suspect, data originate from an NCDC data source

7 = Erroneous, data originate from an NCDC data source

9 = Passed gross limits check if element is present

FLD LEN: 3

HEATING-COOLING-DEGREE-DAYS identifier

The identifier that denotes the start of an **HEATING-COOLING-DEGREE-DAYS** data section.

DOM: A specific domain comprised of the characters in the ASCII character set.

KD1-KD2 An indicator of up to 2 repeating fields of the following items:

HEATING-COOLING-DEGREE-DAYS period quantity

HEATING-COOLING-DEGREE-DAYS code

HEATING-COOLING-DEGREE-DAYS value

HEATING-COOLING-DEGREE-DAYS quality code

FLD LEN: 3

HEATING-COOLING-DEGREE-DAYS period quantity

The quantity of time over which temperatures were sampled to determine the

HEATING-COOLING-DEGREE-DAYS.

MIN: 001 MAX: 744 UNITS: Hours

SCALING FACTOR: 1

DOM: A general domain comprised of the numeric characters (0-9).

999 = Missing

FLD LEN: 1

HEATING-COOLING-DEGREE-DAYS code

The code that denotes the value as being heating degree days or cooling degree days.
DOM: A specific domain comprised of the characters in the ASCII character set.
H: Heating Degree Days
C: Cooling Degree Days

FLD LEN: 4

HEATING-COOLING-DEGREE-DAYS value

The total heating or cooling degree days for a given period, typically for the day or month, as reported by the station (ie, not derived from other data fields). These data use the 65-degree Fahrenheit base as traditionally used for degree days.

MIN: 0000 MAX: 5000 UNITS: Heating or Cooling Degree Days

SCALING FACTOR: 1

DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing

FLD LEN: 1

HEATING-COOLING-DEGREE-DAYS quality code

The code that denotes a quality status of the reported HEATING-COOLING-DEGREE-DAYS data.

DOM: A specific domain comprised of the characters in the ASCII character set.

- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 4 = Passed gross limits check , data originate from an NCDC data source
- 5 = Passed all quality control checks, data originate from an NCDC data source
- 6 = Suspect, data originate from an NCDC data source
- 7 = Erroneous, data originate from an NCDC data source
- 9 = Passed gross limits check if element is present

FLD LEN: 3

EXTREME TEMPERATURES, NUMBER OF DAYS EXCEEDING CRITERIA, FOR THE MONTH identifier

The identifier that represents NUMBER OF DAYS EXCEEDING CRITERIA data.

DOM: A specific domain comprised of the characters in the ASCII character set.

KE1 An indicator of the following items:

- EXTREME TEMPERATURE, NUMBER OF DAYS with maximum temperature 32 F or lower
- EXTREME TEMPERATURE, NUMBER OF DAYS quality code
- EXTREME TEMPERATURE, NUMBER OF DAYS with maximum temperature 90 F or higher
- EXTREME TEMPERATURE, NUMBER OF DAYS quality code
- EXTREME TEMPERATURE, NUMBER OF DAYS with minimum temperature 32 F or lower
- EXTREME TEMPERATURE, NUMBER OF DAYS quality code
- EXTREME TEMPERATURE, NUMBER OF DAYS with minimum temperature 0 F or lower
- EXTREME TEMPERATURE, NUMBER OF DAYS quality code

FLD LEN: 2

EXTREME TEMPERATURES, NUMBER OF DAYS EXCEEDING CRITERIA, FOR THE MONTH

The number of days with maximum temperature 32 F (0.0 C) or lower.

MIN: 00 MAX: 31

DOM: A general domain comprised of the numeric characters (0-9).
99 = Missing.

FLD LEN: 1

EXTREME TEMPERATURES, NUMBER OF DAYS EXCEEDING CRITERIA, FOR THE MONTH quality code

The code that denotes a quality status of the reported days with max temperature 32 F (0.0 C) or lower.

DOM: A specific domain comprised of the characters in the ASCII character set.

- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 4 = Passed gross limits check, data originate from an NCDC data source
- 5 = Passed all quality control checks, data originate from an NCDC data source
- 6 = Suspect, data originate from an NCDC data source

- 7 = Erroneous, data originate from an NCDC data source
- 9 = Passed gross limits check if element is present

FLD LEN: 2

EXTREME TEMPERATURES, NUMBER OF DAYS EXCEEDING CRITERIA, FOR THE MONTH

The number of days with maximum temperature 90 F (32.2 C) or higher, except for Alaska—70 F (21.1 C) or higher.

MIN: 00 MAX: 31

DOM: A general domain comprised of the numeric characters (0-9).
99 = Missing.

FLD LEN: 1

EXTREME TEMPERATURES, NUMBER OF DAYS EXCEEDING CRITERIA, FOR THE MONTH quality code

The code that denotes a quality status of the reported days with max temperature 90 F (32.2 C) or higher (70 F for Alaska).

DOM: A specific domain comprised of the characters in the ASCII character set.

- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 4 = Passed gross limits check, data originate from an NCDC data source
- 5 = Passed all quality control checks, data originate from an NCDC data source
- 6 = Suspect, data originate from an NCDC data source
- 7 = Erroneous, data originate from an NCDC data source
- 9 = Passed gross limits check if element is present

FLD LEN: 2

EXTREME TEMPERATURES, NUMBER OF DAYS EXCEEDING CRITERIA, FOR THE MONTH

The number of days with minimum temperature 32 F (0.0 C) or lower.

MIN: 00 MAX: 31

DOM: A general domain comprised of the numeric characters (0-9).
99 = Missing.

FLD LEN: 1

EXTREME TEMPERATURES, NUMBER OF DAYS EXCEEDING CRITERIA, FOR THE MONTH quality code

The code that denotes a quality status of the reported days with min temperature 32 F (0.0 C) or lower.

DOM: A specific domain comprised of the characters in the ASCII character set.

- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 4 = Passed gross limits check, data originate from an NCDC data source
- 5 = Passed all quality control checks, data originate from an NCDC data source
- 6 = Suspect, data originate from an NCDC data source
- 7 = Erroneous, data originate from an NCDC data source
- 9 = Passed gross limits check if element is present

FLD LEN: 2

EXTREME TEMPERATURES, NUMBER OF DAYS EXCEEDING CRITERIA, FOR THE MONTH

The number of days with minimum temperature 0 F (-17.8 C) or lower.

MIN: 00 MAX: 31

DOM: A general domain comprised of the numeric characters (0-9).
99 = Missing.

FLD LEN: 1

EXTREME TEMPERATURES, NUMBER OF DAYS EXCEEDING CRITERIA, FOR THE MONTH quality code

The code that denotes a quality status of the reported days with min temperature 0 F (-17.8 C) or lower.

DOM: A specific domain comprised of the characters in the ASCII character set.

- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 4 = Passed gross limits check, data originate from an NCDC data source
- 5 = Passed all quality control checks, data originate from an NCDC data source

6 = Suspect, data originate from an NCDC data source
7 = Erroneous, data originate from an NCDC data source
9 = Passed gross limits check if element is present

FLD LEN: 3

Hourly Calculated Temperature Section identifier

The identifier that indicates a calculated hourly average air temperature derived by an algorithm whose inputs are hourly temperature averages from each of the 3 co-located temperature sensors. This section appears in the last ISD record of the hour for the 15-minute data stream only. Unlike the temperature value found in the mandatory data section which is produced using 5-minute values, this value is calculated using an hourly average.

DOM: A specific domain comprised of the characters in the ASCII character set.

KF1 An indicator of the following items:

TEMP derived air temperature
TEMP_QC quality code

FLD LEN: 5

TEMP derived air temperature

The calculated hourly average air temperature.

MIN: -9999 MAX: +9998 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: 1

TEMP_QC quality code

The code that indicates ISD's evaluation of the quality status of the calculated hourly average air temperature.

DOM: A specific domain comprised of the numeric characters (0-9).

1 = Passed all quality control checks
3 = Failed all quality control checks

FLD LEN: 3

AVERAGE DEW POINT AND WET BULB TEMPERATURE occurrence identifier

The identifier that denotes the start of an AVERAGE-DEW-POINT-AND-WET-BULB-TEMPERATURE.

DOM: A specific domain comprised of the characters in the ASCII character set.

KG1-KG2 An indicator of up to two repeating fields of the following items:

AVERAGE-DEW-POINT-AND-WET-BULB-TEMPERATURE period quantity
AVERAGE-DEW-POINT-AND-WET-BULB-TEMPERATURE code
AVERAGE-DEW-POINT-AND-WET-BULB-TEMPERATURE temperature
AVERAGE-DEW-POINT-AND-WET-BULB-TEMPERATURE derived code
AVERAGE-DEW-POINT-AND-WET-BULB-TEMPERATURE quality code

FLD LEN: 3

AVERAGE-DEW-POINT-AND-WET-BULB-TEMPERATURE period quantity

The quantity of time over which temperature were averaged to determine the AVERAGE-DEW-POINT-AND-WET-BULB-TEMPERATURE

MIN: 001 MAX: 744 UNITS: hours

SCALING FACTOR: 1

DOM: A general domain comprised of the numeric characters (0-9).
999 = Missing.

FLD LEN: 1

AVERAGE-DEW-POINT-AND-WET-BULB-TEMPERATURE code

The code that denotes an AVERAGE-DEW-POINT-AND-AVERAGE-WET-BULB-TEMPERATURE as an average

DOM: A specific domain comprised of the characters in the ASCII character set.

D = Average dew point temperature
W = Average wet bulb temperature
9 = missing

FLD LEN: 5

AVERAGE-DEW-POINT-AND-WET-BULB-TEMPERATURE temperature

The average dew point or average wet bulb temperature for a given period, typically for the day or month, derived from other data fields

MIN: -9900 MAX: +6300 UNITS: degrees Celsius

SCALING FACTOR: 100

DOM: A general domain comprised of the numeric characters (0-9), a plus sign (+), and a minus sign (-).
+9999 = missing

FLD LEN: 1

AVERAGE-DEW-POINT-AND-WET-BULB-TEMPERATURE derived code

The code that denotes a quality status of the reported AVERAGE-DEW-POINT-AND-AVERAGE-WET-BULB-TEMPERATURE

DOM: A specific domain comprised of the characters in the ASCII character set.

D = Derived from hourly values
9 = missing

FLD LEN: 1

AVERAGE-DEW-POINT-AND-WET-BULB-TEMPERATURE quality code

The code that denotes a quality status of the reported AVERAGE-DEW-POINT-AND-AVERAGE-WET-BULB-TEMPERATURE

DOM: A specific domain comprised of the characters in the ASCII character set.

0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
4 = Passed gross limits check, from NCDC ASOS/AWOS
5 = Passed all quality control checks, from NCDC ASOS/AWOS
6 = Suspect, from NCDC ASOS/AWOS
7 = Erroneous, from NCDC ASOS/AWOS
9 = Missing

Pressure Data

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 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 4 = Passed gross limits check , data originate from an NCDC data source
- 5 = Passed all quality control checks, data originate from an NCDC data source
- 6 = Suspect, data originate from an NCDC data source
- 7 = Erroneous, data originate from an NCDC data source
- 9 = Passed gross limits check if element is present

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 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 4 = Passed gross limits check , data originate from an NCDC data source
- 5 = Passed all quality control checks, data originate from an NCDC data source
- 6 = Suspect, data originate from an NCDC data source
- 7 = Erroneous, data originate from an NCDC data source
- 9 = Passed gross limits check if element is present

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 = Passed gross limits check
 1 = Passed all quality control checks
 2 = Suspect
 3 = Erroneous
 9 = Passed gross limits check if element is present

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 ATMOSPHERIC-PRESSURE-CHANGE.
 DOM: A specific domain comprised of the characters in the ASCII character set.
 0 = Passed gross limits check
 1 = Passed all quality control checks
 2 = Suspect
 3 = Erroneous
 9 = Passed gross limits check if element is present

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 = Passed gross limits check
 1 = Passed all quality control checks
 2 = Suspect
 3 = Erroneous
 9 = Passed gross limits check if element is present

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
GEOPOTENTIAL-HEIGHT-ISOBARIC-LEVEL height dimension quality code

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: 1

GEOPOTENTIAL-HEIGHT-ISOBARIC-LEVEL height dimension quality code
The code that denotes a quality status of the reported GEOPOTENTIAL-HEIGHT-ISOBARIC-LEVEL height dimension.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
9 = Passed gross limits check if element is present

FLD LEN: 3

ATMOSPHERIC-PRESSURE-OBSERVATION (STP/SLP) occurrence 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.
MF1 An indicator of the following items:
ATMOSPHERIC-PRESSURE-OBSERVATION (STP/SLP) average station pressure for the day
ATMOSPHERIC-PRESSURE-OBSERVATION (STP/SLP) average station pressure quality code
ATMOSPHERIC-PRESSURE-OBSERVATION (STP/SLP) average sea level pressure for the day
ATMOSPHERIC-PRESSURE-OBSERVATION (STP/SLP) average sea level pressure quality code

FLD LEN: 5

ATMOSPHERIC-PRESSURE-OBSERVATION (STP/SLP) average station pressure for the day
The average pressure at the observed point for the day
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 (STP/SLP) quality code
The code that denotes a quality status of an average station pressure
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = Passed gross limits check
1 = Passed all quality control checks

- 2 = Suspect
- 3 = Erroneous
- 4 = Passed gross limits check, from NCDC ASOS/AWOS
- 5 = Passed all quality control checks, from NCDC ASOS/AWOS
- 6 = Suspect, from NCDC ASOS/AWOS
- 7 = Erroneous, from NCDC ASOS/AWOS
- 9 = Missing

FLD LEN: 5

ATMOSPHERIC-PRESSURE-OBSERVATION (STP/SLP) average sea level pressure for the day

The average sea level pressure at the observed point for the day

MIN: 08600 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 (STP/SLP) quality code

The code that denotes a quality status of an average station pressure

DOM: A specific domain comprised of the characters in the ASCII character set.

0 = Passed gross limits check

1 = Passed all quality control checks

2 = Suspect

3 = Erroneous

4 = Passed gross limits check, data originate from an NCDC data source

5 = Passed all quality control checks, data originate from an NCDC data source

6 = Suspect, data originate from an NCDC data source

7 = Erroneous, from NCDC ASOS/AWOS

9 = 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.

MG1 An indicator of the occurrence of the following items:

ATMOSPHERIC-PRESSURE-OBSERVATION average station pressure for the day

ATMOSPHERIC-PRESSURE-OBSERVATION average station pressure quality code

ATMOSPHERIC-PRESSURE-OBSERVATION minimum sea level pressure for the day

ATMOSPHERIC-PRESSURE-OBSERVATION minimum sea level pressure quality code

FLD LEN: 5

ATMOSPHERIC-PRESSURE-OBSERVATION average station pressure for the day

The average pressure at the observation point for the day.

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 average station pressure quality code

The code that denotes the quality status of an average station pressure.

DOM: A specific domain comprised of the characters in the ASCII character set.

4 = Passed gross limits check, data originate from an NCDC data source

5 = Passed all quality control checks, data originate from an NCDC data source

6 = Suspect, data originate from an NCDC data source

7 = Erroneous, data originate from an NCDC data source

9 = Passed gross limits check if element is present

FLD LEN: 5

ATMOSPHERIC-PRESSURE-OBSERVATION minimum sea level pressure for the day

The minimum sea level pressure for the day at the observation point.
MIN: 08600 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 minimum sea level pressure for the day quality code

The code that denotes the quality status of the minimum sea level pressure for the day.

DOM: A specific domain comprised of the characters in the ASCII character set.

- 4 = Passed gross limits check, data originate from an NCDC data source
- 5 = Passed all quality control checks, data originate from an NCDC data source
- 6 = Suspect, data originate from an NCDC data source
- 7 = Erroneous, data originate from an NCDC data source
- 9 = Passed gross limits check if element is present

FLD LEN: 3

ATMOSPHERIC-PRESSURE-OBSERVATION FOR THE MONTH 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.

- MH1** An indicator of the occurrence of the following items:
- ATMOSPHERIC-PRESSURE-OBSERVATION average station pressure for the month
 - ATMOSPHERIC-PRESSURE-OBSERVATION average station pressure quality code
 - ATMOSPHERIC-PRESSURE-OBSERVATION average sea level pressure for the month
 - ATMOSPHERIC-PRESSURE-OBSERVATION average sea level pressure quality code

FLD LEN: 5

ATMOSPHERIC-PRESSURE-OBSERVATION FOR THE MONTH average station pressure for the month

The average pressure at the observation point for the month.

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 FOR THE MONTH average station pressure quality code

The code that denotes the quality status of an average station pressure.

DOM: A specific domain comprised of the characters in the ASCII character set.

- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 4 = Passed gross limits check, data originate from an NCDC data source
- 5 = Passed all quality control checks, data originate from an NCDC data source
- 6 = Suspect, data originate from an NCDC data source
- 7 = Erroneous, data originate from an NCDC data source
- 9 = Passed gross limits check if element is present

FLD LEN: 5

ATMOSPHERIC-PRESSURE-OBSERVATION FOR THE MONTH average sea level pressure for the month

The average sea level pressure for the month at the observation point.

MIN: 08600 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 FOR THE MONTH average sea level pressure for the month quality code

The code that denotes the quality status of the average sea level pressure for the month.

DOM: A specific domain comprised of the characters in the ASCII character set.

- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 4 = Passed gross limits check, data originate from an NCDC data source
- 5 = Passed all quality control checks, data originate from an NCDC data source
- 6 = Suspect, data originate from an NCDC data source
- 7 = Erroneous, data originate from an NCDC data source
- 9 = Passed gross limits check if element is present

FLD LEN: 3

ATMOSPHERIC-PRESSURE-OBSERVATION FOR THE MONTH 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.

MK1 An indicator of the occurrence of the following items:

- ATMOSPHERIC-PRESSURE-OBSERVATION maximum sea level pressure for the month
- ATMOSPHERIC-PRESSURE-OBSERVATION maximum sea level pressure date-time
- ATMOSPHERIC-PRESSURE-OBSERVATION maximum sea level pressure quality code
- ATMOSPHERIC-PRESSURE-OBSERVATION minimum sea level pressure for the month
- ATMOSPHERIC-PRESSURE-OBSERVATION minimum sea level pressure date-time
- ATMOSPHERIC-PRESSURE-OBSERVATION minimum sea level pressure quality code

FLD LEN: 5

ATMOSPHERIC-PRESSURE-OBSERVATION FOR THE MONTH maximum sea level pressure for the month

The maximum sea level pressure at the observation point for the month.

MIN: 08600 MAX: 10900 UNITS: Hectopascals

SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters (0-9).
99999 = Missing

FLD LEN: 6

ATMOSPHERIC-PRESSURE-OBSERVATION FOR THE MONTH maximum sea level pressure, date-time

The date-time of occurrence of the pressure value, given as the date-time; e.g., 051500 indicates day 05, time 1500.

MIN: 010000 MAX: 312359

DOM: A general domain comprised of the numeric characters (0-9).
999999 = Missing

FLD LEN: 1

ATMOSPHERIC-PRESSURE-OBSERVATION FOR THE MONTH maximum sea level pressure quality code

The code that denotes the quality status of an maximum sea level pressure.

DOM: A specific domain comprised of the characters in the ASCII character set.

- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 4 = Passed gross limits check, data originate from an NCDC data source
- 5 = Passed all quality control checks, data originate from an NCDC data source
- 6 = Suspect, data originate from an NCDC data source
- 7 = Erroneous, data originate from an NCDC data source
- 9 = Passed gross limits check if element is present

FLD LEN: 5

ATMOSPHERIC-PRESSURE-OBSERVATION FOR THE MONTH minimum sea level pressure for the month

The minimum sea level pressure at the observation point for the month.

MIN: 08600 MAX: 10900 UNITS: Hectopascals

SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters (0-9).
99999 = Missing

FLD LEN: 6

ATMOSPHERIC-PRESSURE-OBSERVATION FOR THE MONTH minimum sea level pressure, date-time

The date-time of occurrence of the pressure value, given as the date-time; e.g., 051500 indicates day 05, time 1500.

MIN: 010000 MAX: 312359

DOM: A general domain comprised of the numeric characters (0-9).
999999 = Missing

FLD LEN: 1

ATMOSPHERIC-PRESSURE-OBSERVATION FOR THE MONTH minimum sea level pressure quality code

The code that denotes the quality status of a minimum sea level pressure.

DOM: A specific domain comprised of the characters in the ASCII character set.

- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 4 = Passed gross limits check, data originate from an NCDC data source
- 5 = Passed all quality control checks, data originate from an NCDC data source
- 6 = Suspect, data originate from an NCDC data source
- 7 = Erroneous, data originate from an NCDC data source
- 9 = Passed gross limits check if element is present

Weather Occurrence Data

FLD LEN: 3

PRESENT-WEATHER-IN-VICINITY-OBSERVATION occurrence identifier

The identifier that signifies the reporting of present weather.

DOM: A specific domain comprised of the ASCII characters.

- MV1** = first weather reported
- MV2** = second weather reported
- MV3** = third weather reported
- MV4** = fourth weather reported
- MV5** = fifth weather reported
- MV6** = sixth weather reported
- MV7** = seventh weather reported

An indicator of up to 7 repeating fields of the following items:

PRESENT-WEATHER-OBSERVATION atmospheric condition code.

PRESENT-WEATHER-OBSERVATION quality manual atmospheric condition code

FLD LEN: 2

PRESENT-WEATHER-IN-VICINITY-OBSERVATION atmospheric condition code

The code that denotes a specific type of weather observed between 5 and 10 statute miles of the station at the time of observation. Observed at selected stations from July 1, 1996 to present.

DOM: A specific domain comprised of the characters in the ASCII character set.

- 00: No observation
- 01: Thunderstorm in vicinity
- 02: Showers in vicinity
- 03: Sandstorm in vicinity
- 04: Sand / dust whirls in vicinity
- 05: Duststorm in vicinity
- 06: Blowing snow in vicinity
- 07: Blowing sand in vicinity
- 08: Blowing dust in vicinity
- 09: Fog in vicinity
- 99: Missing

FLD LEN: 1

PRESENT-WEATHER-IN-VICINITY-OBSERVATION quality atmospheric condition code

The code that denotes a quality status of a reported present weather in vicinity observation from a station.

DOM: A specific domain comprised of the characters in the ASCII character set.
4 = Passed gross limits check , data originate from an NCDC data source
5 = Passed all quality control checks, data originate from an NCDC data source
6 = Suspect, data originate from an NCDC data source
7 = Erroneous, data originate from an NCDC data source
9 = Passed gross limits check if element is present

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.

Note: Lack of an MW1 report normally indicates that the station did not report any present weather data.

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

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)

30-39 Dust, sand, or blowing snow in the air, but no precipitation at the time of observation.

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 visible, 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

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

- 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 = Passed gross limits check
- 1 = Passed all quality control checks

- 2 = Suspect
- 3 = Erroneous
- 4 = Passed gross limits check , data originate from an NCDC data source
- 5 = Passed all quality control checks, data originate from an NCDC data source
- 6 = Suspect, data originate from an NCDC data source
- 7 = Erroneous, data originate from an NCDC data source
- 9 = Passed gross limits check if element is present

Wind Data

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
- SUPPLEMENTARY-WIND-OBSERVATION speed rate quality code

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 numeric characters (0-9).

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: 1

SUPPLEMENTARY-WIND-OBSERVATION speed rate quality code

The code that denotes a quality status of the reported SUPPLEMENTARY-WIND-OBSERVATION speed rate.

DOM: A specific domain comprised of the characters in the ASCII character set.

- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 9 = Passed gross limits check if element is present

FLD LEN: 3

Hourly/Sub-Hourly Wind Section identifier

The identifier that indicates an observation of wind speed at a height of 1.5 meters from the ground, typically used by Climate Reference Network stations.

This section appears one or more time per hour. The wind average value in this section is a duplicate of the wind average value in the mandatory data section. It is included in this section so that all wind values are conveniently available in a single section.

DOM: A specific domain comprised of the characters in the ASCII character set.

OB1, OB2 An indicator of the following items:

- WIND_AVG time period
- WIND_MAX maximum gust
- WIND_MAX_QC quality code
- WIND_MAX_FLAG quality code
- WIND_MAX direction of the maximum gust
- WIND_MAX_QC direction quality code
- WIND_MAX_FLAG direction quality code
- WIND_STD wind speed standard deviation
- WIND_STD_QC quality code
- WIND_STD_FLAG quality code
- WIND_DIR_STD wind direction standard deviation
- WIND_DIR_STD_QC quality code
- WIND_DIR_STD_FLAG quality code

FLD LEN: 3

WIND_AVG Time period in minutes, for which the data in this section (OB1) pertains—eg, 060 = 60 minutes (1 hour).

MIN: 001 MAX: 998 UNITS: Minutes

DOM: A general domain comprised of the numeric characters (0-9).
999 = Missing.

FLD LEN: 4

WIND_MAX maximum gust

The maximum 10 second wind speed.

MIN: 0000 MAX: 9998 UNITS: meters per second

SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing.

FLD LEN: 1

WIND_MAX_QC quality code

The code that indicates ISD's evaluation of the quality status of the maximum gust.

DOM: A specific domain comprised of the numeric characters (0-9).

- 1 = Passed all quality control checks
- 3 = Failed all quality control checks
- 9 = Missing

FLD LEN: 1

WIND_MAX_FLAG quality code

A flag that indicates the network's internal evaluation of the quality status of the maximum gust. Most users will find the preceding quality code **WIND_MAX_QC** to be the simplest and most useful quality indicator.

DOM: A specific domain comprised of the numeric characters (0-9)

- 0 = Passed all quality control checks
- other – Did not pass all quality checks
- 9 = Missing

FLD LEN: 3

WIND_MAX direction of the maximum gust

The direction measured in clockwise angular degrees from which the maximum 10 second wind speed occurred.

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: 1

WIND_MAX_QC direction quality code

The code that indicates ISD's evaluation of the quality status of the maximum gust direction.

DOM: A specific domain comprised of the numeric characters (0-9).

1 = Passed all quality control checks

3 = Failed all quality control checks

9 = Missing

FLD LEN: 1

WIND_MAX_FLAG direction quality code

A flag that indicates the network's internal evaluation of the quality status of the maximum gust direction. Most users will find the preceding quality code **WIND_MAX_QC** to be the simplest and most useful quality indicator.

DOM: A specific domain comprised of the numeric characters (0-9)

0 = Passed all quality control checks

other – Did not pass all quality checks

9 = Missing

FLD LEN: 5

WIND_STD wind speed standard deviation

The wind speed standard deviation.

MIN: 00000 MAX: 99999

SCALING FACTOR: 100

DOM: A general domain comprised of the numeric characters (0-9).

99999 = Missing.

FLD LEN: 1

WIND_STD_QC quality code

The code that indicates ISD's evaluation of the quality status of the wind speed standard deviation.

DOM: A specific domain comprised of the numeric characters (0-9).

1 = Passed all quality control checks

3 = Failed all quality control checks

9 = Missing

FLD LEN: 1

WIND_STD_FLAG quality code

A flag that indicates the network's internal evaluation of the quality status of the wind speed standard deviation. Most users will find the preceding quality code **WIND_STD_QC** to be the simplest and most useful quality indicator.

DOM: A specific domain comprised of the numeric characters (0-9)

0 = Passed all quality control checks

other – Did not pass all quality checks

9 = Missing

FLD LEN: 5

WIND_DIR_STD wind direction standard deviation

The wind direction standard deviation.

MIN: 00000 MAX: 99999

SCALING FACTOR: 100

DOM: A general domain comprised of the numeric characters (0-9).

99999 = Missing.

FLD LEN: 1

WIND_DIR_STD_QC quality code

The code that indicates ISD's evaluation of the quality status of the wind direction standard deviation.

DOM: A specific domain comprised of the numeric characters (0-9).

1 = Passed all quality control checks

3 = Failed all quality control checks

9 = Missing

FLD LEN: 1

WIND_DIR_STD_FLAG quality code

A flag that indicates the network's internal evaluation of the quality status of the wind direction standard deviation. Most users will find the preceding quality code **WIND_DIR_STD_QC** to be the simplest and most useful quality indicator.

DOM: A specific domain comprised of the numeric characters (0-9)

0 = Passed all quality control checks

other – Did not pass all quality checks

9 = 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).

9999 = Missing

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 = Passed gross limits check

1 = Passed all quality control checks

2 = Suspect

3 = Erroneous

4 = Passed gross limits check , data originate from an NCDC data source

5 = Passed all quality control checks, data originate from an NCDC data source

6 = Suspect, data originate from an NCDC data source

7 = Erroneous, data originate from an NCDC data source

9 = Passed gross limits check if element is present

FLD LEN: 3

SUMMARY-OF-DAY-WIND-OBSERVATION identifier

The identifier that denotes the start of a SUMMARY-OF-DAY-WIND-OBSERVATION data section.

DOM: A specific domain comprised of the characters in the ASCII character set.

OE1 - OE3: An indicator of up to 3 occurrences of the following item:

SUMMARY-OF-DAY-WIND-OBSERVATION type code

SUMMARY-OF-DAY-WIND-OBSERVATION period quantity

SUMMARY-OF-DAY-WIND-OBSERVATION speed rate

SUMMARY-OF-DAY-WIND-OBSERVATION direction

SUMMARY-OF-DAY-WIND-OBSERVATION time of occurrence

SUMMARY-OF-DAY-WIND-OBSERVATION quality code

FLD LEN: 1

SUMMARY-OF-DAY-WIND-OBSERVATION type code

The code that denotes a type of SUMMARY-OF-DAY-WIND-OBSERVATION.

DOM: A specific domain comprised of the ASCII characters.

1 = Peak wind speed for the day

2 = Fastest 2-minute wind speed for the day

3 = Average wind speed for the day

4 = Fastest 5-minute wind speed for the day

5 = Fastest mile wind speed for the day

FLD LEN: 2

SUMMARY-OF-DAY-WIND-OBSERVATION period quantity

The quantity of time over which a SUMMARY-OF-DAY-WIND-OBSERVATION occurred.

MIN: 24 MAX: 24 UNITS: Hours

DOM: A general domain comprised of the ASCII characters.
99 = Missing

FLD LEN: 5

SUMMARY-OF-DAY-WIND-OBSERVATION speed

The rate of horizontal wind speed of air reported in the SUMMARY-OF-DAY-WIND-OBSERVATION.

MIN: 00000 MAX: 20000 UNITS: Meters per Second

SCALING FACTOR: 100

DOM: A general domain comprised of the numeric characters (0-9).

99999 = Missing

FLD LEN: 3

SUMMARY-OF-DAY-WIND-OBSERVATION direction of wind

The angle, measured in a clockwise direction, between true north and the direction from which the wind is blowing, for the summary of day wind report.

MIN: 001 MAX: 360 UNITS: Angular Degrees

SCALING FACTOR: 1

DOM: A general domain comprised of the numeric characters (0-9).

999 = Missing

Note: A direction of 999 with a speed of 00000 indicates calm conditions (0 wind speed).

FLD LEN: 4

SUMMARY-OF-DAY-WIND-OBSERVATION time of occurrence in Z-time (UTC)

The time of occurrence of the wind reported in the SUMMARY-OF-DAY-WIND-OBSERVATION.

MIN: 0000 MAX: 2359 UNITS: hours-minutes

SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters (0-9).

9999 = Missing

FLD LEN: 1

SUMMARY-OF-DAY-WIND-OBSERVATION quality code

The code that denotes a quality status of the reported SUMMARY-OF-DAY-WIND-OBSERVATION.

DOM: A specific domain comprised of the characters in the ASCII character set.

4 = Passed gross limits check , data originate from an NCDC data source

5 = Passed all quality control checks, data originate from an NCDC data source

6 = Suspect, data originate from an NCDC data source

7 = Erroneous, data originate from an NCDC data source

9 = Passed gross limits check if element is present

FLD LEN: 3

RELATIVE HUMIDITY occurrence identifier

The identifier that denotes the start of a RELATIVE-HUMIDITY data section

DOM: A specific domain comprised of the characters in the ASCII character set

RH1 – RH3 An indicator of up to 3 occurrences of the following items

RELATIVE HUMIDITY period quantity

RELATIVE HUMIDITY code

RELATIVE HUMIDITY percentage

RELATIVE HUMIDITY derived code

RELATIVE HUMIDITY quality code

FLD LEN: 3

RELATIVE HUMIDITY period quantity

The quantity of time over which relative humidity percentages were averaged to determine the RELATIVE HUMIDITY

MIN: 001 MAX: 744 UNITS: Hours

SCALING FACTOR: 1

DOM: A general domain comprised of the numeric characters (0-9)

999 = missing

FLD LEN: 1

RELATIVE HUMIDITY code

The code that denotes the RELATIVE HUMIDITY as an average

DOM: A specific domain comprised of the characters in the ASCII character set

M: Mean relative humidity
N: Minimum relative humidity
X: Maximum relative humidity
9 = missing

FLD LEN: 3

RELATIVE HUMIDITY percentage

The average maximum or minimum relative humidity for a given period, typically for the day or month, derived from other data fields

MIN: 000 MAX: 100 UNITS: percent

SCALING FACTOR: 1

DOM: A general domain comprised of the numeric characters (0-9).
999 = missing

FLD LEN: 1

RELATIVE HUMIDITY derived code

The code that denotes a derived code of the reported RELATIVE HUMIDITY percentage.

DOM: A specific domain comprised of the characters in the ASCII character set.

D = Derived from hourly values

9 = missing

FLD LEN: 1

RELATIVE HUMIDITY quality code

The code that denotes a quality status of the reported RELATIVE HUMIDITY percentage

DOM: A specific domain comprised of the characters in the ASCII character set.

0 = Passed gross limits check

1 = Passed all quality control checks

2 = Suspect

3 = Erroneous

4 = Passed gross limits check, from NCDC ASOS/AWOS

5 = Passed all quality control checks, from NCDC ASOS/AWOS

6 = Suspect, from NCDC ASOS/AWOS

7 = Erroneous, from NCDC ASOS/AWOS

9 = Missing

Sea Surface Temperature Data

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

SEA-SURFACE-TEMPERATURE-OBSERVATION temperature quality code

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 (-).

+999 = Missing

FLD LEN: 1

SEA-SURFACE-TEMPERATURE-OBSERVATION temperature quality code

The code that denotes a quality status of the reported SEA-SURFACE-TEMPERATURE-OBSERVATION temperature.

DOM: A specific domain comprised of the characters in the ASCII character set.
0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
9 = Passed gross limits check if element is present

Soil Temperature Data

FLD LEN: 3

SOIL-TEMPERATURE identifier
The identifier that denotes the start of a SOIL TEMPERATURE data section.
DOM: A specific domain comprised of the characters in the ASCII character set.
ST1: An indicator of fields of the following items:
SOIL-TEMPERATURE Temperature Type
SOIL-TEMPERATURE Soil Temperature
SOIL-TEMPERATURE quality code
SOIL-TEMPERATURE Depth
SOIL-TEMPERATURE quality code
SOIL-TEMPERATURE Soil Cover
SOIL-TEMPERATURE quality code
SOIL-TEMPERATURE Sub Plot
SOIL-TEMPERATURE quality code

FLD LEN: 1

SOIL-TEMPERATURE temperature type
The type of temperature reported.
MIN: 1 MAX: 9
DOM: A specific domain comprised of the characters in the ASCII character set.
1 = Maximum Temperature
2 = Minimum Temperature
3 = AM or Noon Temperature
4 = PM or Midnight Temperature
9 = Missing

FLD LEN: 5

SOIL-TEMPERATURE soil temperature
The temperature of the soil for the previous 24 hours.
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: 1

SOIL-TEMPERATURE quality code
The code that denotes a quality status of the reported temperature data.
DOM: A specific domain comprised of the characters in the ASCII character set.
4 = Passed gross limits check, from NCDC Data source
5 = Passed all quality control checks, from NCDC Data source
6 = Suspect, from NCDC Data source
7 = Erroneous, from NCDC Data source
9 = Passed gross limits check if element is present

FLD LEN: 4

SOIL-TEMPERATURE temperature depth
The depth below ground level of the temperature reported.
MIN: 0000 MAX: 9998 UNITS: Centimeters
SCALING FACTOR: 10
9999 = Missing

FLD LEN: 1

SOIL-TEMPERATURE depth quality code

The code that denotes a quality status of the reported temperature depth data.

DOM: A specific domain comprised of the characters in the ASCII character set.

- 4 = Passed gross limits check, from NCDC Data source
- 5 = Passed all quality control checks, from NCDC Data source
- 6 = Suspect, from NCDC Data source
- 7 = Erroneous, from NCDC Data source
- 9 = Passed gross limits check if element is present

FLD LEN: 2

SOIL-TEMPERATURE soil cover

The type of soil cover.

MIN: 01 MAX: 99

DOM: A specific domain comprised of the characters in the ASCII character set.

- 01 = Grass
- 02 = Fallow
- 03 = Bare Ground
- 04 = Brome Grass
- 05 = Sod
- 06 = Straw Mulch
- 07 = Grass Muck
- 08 = Bare Muck
- 99 = Missing

FLD LEN: 1

SOIL-TEMPERATURE soil cover quality code

The code that denotes a quality status of the reported soil cover data.

DOM: A specific domain comprised of the characters in the ASCII character set.

- 4 = Passed gross limits check, from NCDC Data source
- 5 = Passed all quality control checks, from NCDC Data source
- 6 = Suspect, from NCDC Data source
- 7 = Erroneous, from NCDC Data source
- 9 = Passed gross limits check if element is present

FLD LEN: 1

SOIL-TEMPERATURE sub plot

The sub plot number for the reported temperature.

MIN: 0 MAX: 9

9=Missing

FLD LEN: 1

SOIL-TEMPERATURE sub plot quality code

The code that denotes a quality status of the reported sub plot data.

DOM: A specific domain comprised of the characters in the ASCII character set.

- 4 = Passed gross limits check, from NCDC Data source
- 5 = Passed all quality control checks, from NCDC Data source
- 6 = Suspect, from NCDC Data source
- 7 = Erroneous, from NCDC Data source
- 9 = Passed gross limits check if element is present

Marine Data

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 quality code
WAVE-MEASUREMENT sea state code
WAVE-MEASUREMENT sea state code quality 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: 30 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: 1

WAVE-MEASUREMENT quality code

The code that denotes a quality status of the reported WAVE-MEASUREMENT.

DOM: A specific domain comprised of the characters in the ASCII character set.

0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
9 = Passed gross limits check if element is present

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: 1

WAVE-MEASUREMENT sea state code quality code

The code that denotes a quality status of the reported WAVE-MEASUREMENT sea state code.

DOM: A specific domain comprised of the characters in the ASCII character set.

0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous

9 = Passed gross limits check if element is present

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
WAVE-MEASUREMENT primary swell quality code

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: 1

WAVE-MEASUREMENT primary swell quality code

The code that denotes a quality status of the reported WAVE-MEASUREMENT primary swell.

DOM: A specific domain comprised of the characters in the ASCII character set.

0 = Passed gross limits check

1 = Passed all quality control checks

2 = Suspect

3 = Erroneous

9 = Passed gross limits check if element is present

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
WAVE-MEASUREMENT secondary swell quality code

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).
999 = 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: 1
WAVE-MEASUREMENT secondary swell quality code
The code that denotes a quality status of the reported WAVE-MEASUREMENT secondary swell.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
9 = Passed gross limits check if element is present

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
PLATFORM-ICE-ACCRETION quality 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: 1

PLATFORM-ICE-ACCRETION quality code

The code that denotes a quality status of the reported PLATFORM-ICE-ACCRETION.

DOM: A specific domain comprised of the characters in the ASCII character set.

- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 9 = Passed gross limits check if element is present

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
- WATER-SURFACE-ICE-OBSERVATION quality code

Note: If more than one ice edge can be stated, the nearest or most important shall be reported.

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

9: Missing

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

FLD LEN: 1

WATER-SURFACE-ICE-OBSERVATION quality code

The code that denotes a quality status of the reported WATER-SURFACE-ICE-OBSERVATION.

DOM: A specific domain comprised of the characters in the ASCII character set.

0 = Passed gross limits check

1 = Passed all quality control checks

2 = Suspect

3 = Erroneous

9 = Passed gross limits check if element is present

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

WATER-SURFACE-ICE-HISTORICAL-OBSERVATION quality 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: 1

WATER-SURFACE-ICE-HISTORICAL-OBSERVATION quality code

The code that denotes a quality status of the reported WATER-SURFACE-ICE-HISTORICAL-OBSERVATION.

DOM: A specific domain comprised of the characters in the ASCII character set.

0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
9 = Passed gross limits check if element is present

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
SOD: Summary of Day Remarks
SOM: Summary of Month Remarks
HPD: Hourly Precipitation Data 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 an individual GEOPHYSICAL-POINT-OBSERVATION-REMARK text.
MIN: 001 MAX: 999
DOM: A general domain composed of the ASCII characters (0-9).

FLD LEN: 999 (maximum)

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

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, for AFCC USAF SURFACE HOURLY and for ISH Version 2, and

P01 - P99: The following may be occur from 0 to 99 times, for ISH Version 2 (P denotes data originated from historical NCDC HOURLY PRECIPITATION or NCDC SURFACE HOURLY data), and

R01 - R99: The following may be occur from 0 to 99 times, for ISH Version 2 and 3 (R denotes data originated from an NCDC data source from 2006 forward):

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, or in the case of data originating from NCDC SURFACE HOURLY, the units code for the data are stored in this position, and the data quality flag is stored with the parameter code (see N01-N99 below).
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = Original value missing or corrupted
1 = Gross error checks (range and/or domain check)
2 = Geophysical checks (checking the validity against other parameters)
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
6 = Geophysical checks and consistency checks
7 = Gross error checks and geophysical 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
 AOSP: ATMOSPHERIC-PRESSURE-OBSERVATION STATION PRESSURE RATE
 AOSLP: 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
 PRSWA1: PRESENT-WEATHER-OBSERVATION AUTOMATED ATMOSPHERIC CONDITION
 CODE
 PRSWA2: PRESENT-WEATHER-OBSERVATION AUTOMATED ATMOSPHERIC CONDITION
 CODE
 PRSWA3: PRESENT-WEATHER-OBSERVATION AUTOMATED ATMOSPHERIC CONDITION
 CODE
 PRSWA4: PRESENT-WEATHER-OBSERVATION AUTOMATED 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
 PRCP: LIQUID PRECIPITATION DEPTH DIMENSION
 ATMM: EXTREME AIR TEMPERATURE, MAXIMUM AND MINIMUM
 ATMN: EXTREME AIR TEMPERATURE, MINIMUM
 ATMX: EXTREME AIR TEMPERATURE, MAXIMUM
 SNDP: SNOW DEPTH DIMENSION
 SNWF: SNOW ACCUMULATION DEPTH DIMENSION

The following parameter codes may occur with the R01 – R99 identifier. They pertain to QC of the Max Short Duration Precipitation fields AH1 - AH6 and AI1 – AI6. The 6 character field will be represented as follows:

First 3 characters:

A01 – A12 -- indicates this pertains to a precipitation amount, which is stored as the EQD original value

D01 – D12 -- indicates this pertains to the ending day field, which is stored as the EQD original value

T01 – T12 -- indicates this pertains to the ending time field, which is stored as the EQD original value

Note: Values of 01-06 indicate that AH1 – AH6, respectively, are flagged. Values of 07-12 indicate that AI1 – AI6, respectively, are flagged.

These codes will be followed by the 3 character flag description number to complete the 6 character definition. These codes are as follows:

001 INVALID MSDP 5 MIN AMT
002 MSDP 5 MIN AMT OUT OF RANGE
003 INVALID MSDP 5 MIN DATE
004 MSDP 5 MIN DATE OUT OF RANGE
005 INVALID MSDP 5 MIN TIME
006 MSDP 5 MIN TIME OUT OF RANGE
007 INVALID MSDP 10 MIN AMT
008 MSDP 10 MIN AMT > 2 X 5 MIN AMT
009 INVALID MSDP 10 MIN DATE
010 MSDP 10 MIN DATE OUT OF RANGE
011 INVALID MSDP 10 MIN TIME
012 MSDP 10 MIN TIME OUT OF RANGE
013 INVALID MSDP 15 MIN AMT
014 MSDP 15 MIN AMT > 5 + 10 MIN AMT
015 INVALID MSDP 15 MIN DATE
016 MSDP 15 MIN DATE OUT OF RANGE
017 INVALID MSDP 15 MIN TIME
018 MSDP 15 MIN TIME OUT OF RANGE
019 INVALID MSDP 20 MIN AMT
020 MSDP 20 MIN AMT > 5 + 15 MIN AMT
021 MSDP 20 MIN AMT > 2 X 10 MIN AMT
022 INVALID MSDP 20 MIN DATE
023 MSDP 20 MIN DATE OUT OF RANGE
024 INVALID MSDP 20 MIN TIME
025 MSDP 20 MIN TIME OUT OF RANGE
026 INVALID MSDP 30 MIN AMT
027 MSDP 30 MIN AMT > 10 + 20 MIN AMT
028 MSDP 30 MIN AMT > 2 X 15 MIN AMT
029 INVALID MSDP 30 MIN DATE
030 MSDP 30 MIN DATE OUT OF RANGE
031 INVALID MSDP 30 MIN TIME
032 MSDP 30 MIN TIME OUT OF RANGE
033 INVALID MSDP 45 MIN AMT
034 MSDP 45 MIN AMT > 15 + 30 MIN AMT
035 INVALID MSDP 45 MIN DATE
036 MSDP 45 MIN DATE OUT OF RANGE
037 INVALID MSDP 45 MIN TIME
038 MSDP 45 MIN TIME OUT OF RANGE
039 INVALID MSDP 60 MIN AMT
040 MSDP 60 MIN AMT > 15 + 45 MIN AMT
041 MSDP 60 MIN AMT > 2 X 30 MIN AMT
042 INVALID MSDP 60 MIN DATE
043 MSDP 60 MIN DATE OUT OF RANGE
044 INVALID MSDP 60 MIN TIME
045 MSDP 60 MIN TIME OUT OF RANGE
046 INVALID MSDP 80 MIN AMT
047 MSDP 80 MIN AMT > 20 + 60 MIN AMT
048 INVALID MSDP 80 MIN DATE
049 MSDP 80 MIN DATE OUT OF RANGE
050 INVALID MSDP 80 MIN TIME
051 MSDP 80 MIN TIME OUT OF RANGE
052 INVALID MSDP 100 MIN AMT
053 MSDP 100 MIN AMT > 20 + 80 MIN AMT
054 INVALID MSDP 100 MIN DATE
055 MSDP 100 MIN DATE OUT OF RANGE
056 INVALID MSDP 100 MIN TIME

057 MSDP 100 MIN TIME OUT OF RANGE
 058 INVALID MSDP 120 MIN AMT
 059 MSDP 120 MIN AMT > 20 + 100 MIN AMT
 060 MSDP 120 MIN AMT > 2 X 60 MIN AMT
 061 INVALID MSDP 120 MIN DATE
 062 MSDP 120 MIN DATE OUT OF RANGE
 063 INVALID MSDP 120 MIN TIME
 064 MSDP 120 MIN TIME OUT OF RANGE
 065 INVALID MSDP 150 MIN AMT
 066 MSDP 150 MIN AMT > 30 + 120 MIN AMT
 067 INVALID MSDP 150 MIN DATE
 068 MSDP 150 MIN DATE OUT OF RANGE
 069 INVALID MSDP 150 MIN TIME
 070 MSDP 150 MIN TIME OUT OF RANGE
 071 INVALID MSDP 180 MIN AMT
 072 MSDP 180 MIN AMT > 60 + 120 MIN AMT
 073 INVALID MSDP 180 MIN DATE
 074 MSDP 180 MIN DATE OUT OF RANGE
 075 INVALID MSDP 180 MIN TIME
 076 MSDP 180 MIN TIME OUT OF RANGE
 077 MSDP 60 MIN VAL DISAGREES W/HR
 078 MSDP 120 MIN VAL DISAGREES W/HR
 079 MSDP 180 MIN VAL DISAGREES W/HR

FLD LEN: 3

ORIGINAL-OBSERVATION-ELEMENT-QUALITY identifier

The identifier that denotes the existence of ORIGINAL-OBSERVATION-ELEMENT-QUALITY data. These data will appear after the Q## data described above.

DOM: A specific domain comprised of the ASCII character set.

N01 - N99: The following may be occur from 0 to 99 times, for NCDC NCDC SURFACE HOURLY:

ORIGINAL-OBSERVATION-ELEMENT-QUALITY original value text

ORIGINAL-OBSERVATION-ELEMENT-QUALITY units 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 units code

The code that denotes the units code for the data are stored in this position, and the data quality flag is stored with the parameter code below.

DOM: A specific domain comprised of the characters in the ASCII character set.

ELEMENT-UNITS TABLE

Value	Equates to this value from original NCDC SURFACE HOURLY
A	DT Wind direction in tens of degrees
B	F Whole degrees Fahrenheit
C	HF Hundreds of feet
D	HM Miles and hundredths
E	IH Inches and hundredths of mercury
F	IT Inches and thousandths of mercury
G	KD knots and direction in tens of degrees
H	KS Knots and direction in 16 point WBAN Code
I	MT Millibars and tenths
J	NA No units applicable (non-dimensional)
K	N1 No units applicable - element to tenths
L	N2 No units applicable - element to hundredths
M	P Whole percent
O	TC Degrees Celsius in tenths

P	TF	Degrees Fahrenheit in tenths
Q	IS	Miles per hour and sixteen-point wind compass
R	MS	Meters per second and sixteen-point wind compass

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.

First 4 characters = the element name as defined below.

Position 5 = the Flag 1 value as defined below.

Position 6 = Flag 2 value as defined below.

Element names and definitions:

ALC	Sky condition in tenths from ASOS
ALM	Sky condition in eighths from ASOS
ALTP	Altimeter setting
CC51	Sky condition prior to 1951
CLC	Sky condition in tenths
CLM	Sky condition in eighths
CLHT	Ceiling height
CLT	Cloud type and height by layer
C2C3	Total cloud cover by first 2 and first 3 layers
DPTC	Dew point temperature in celsius
DPTP	Dew point temperature in fahrenheit
HZVS	Horizontal visibility
PRES	Station pressure
PWTH	Present weather
PWVC	Present weather in vicinity
RHUM	Relative humidity
SCH	Sky condition (amount and modifier, e.g., thin broken) and height by layer
SLVP	Sea level pressure
TMCD	Dry bulb temperature in celsius
TMPD	Dry bulb temperature in fahrenheit
TMPW	Wet bulb temperature in fahrenheit
TSCE	Total sky cover in eighths
TSKC	Total sky cover in tenths
TSKY	Same as TSKC but expressed in terms of amount and modifier, e.g., thin broken.
WD16	Wind direction and speed in 16 point code
WIND	Wind direction and speed
WND2	Wind direction and speed from ASOS

FLAG-1 (Measurement Value):

A	Wind speed expressed in Beaufort scale, different from the day's given units
C	Ceiling of cirroform clouds at unknown height (Sep 56 - Mar 70)
D	Derived value
E	Estimated value
G	Visibility > or = 100 miles (data value = 10000)
H	Hundredths precision only is indicated in the original observation (except as when found in SLVP with units code MT, this flag means original value is expressed in inches to hundredths, not hundredths of millibars)
I	Wind speed in miles per hour, different from the day's given units
K	Wind speed in knots, different from the day's given units
M	Visibility missing (data value = 99999)
N	Unlimited visibility (data value = 99999)
P	Wind speed in pounds per square foot perpendicular to the wind
R	Dew Point and/or Relative Humidity, originally calculated with respect to ice have been recomputed with respect to water. (DPTP, RHUM)
S	Wind speed in meters per second, different from the day's given units
W	Whole precision only is indicated in the original observation
U	Unlimited ceiling height (DATA-VALUE = 99999). (CLHT)
b	(blank) Flag not needed. (All elements except CC51)

FLAG-2 (Data Quality Flag Value):

- 0 Observed data has passed all internal consistency checks.
 - 1 Validity indeterminable (primarily for pre-1984 data).
 - 2 Observed data has failed an internal consistency check - subsequent edited value follows observed value.
 - 3 Data beginning January 1, 1984 - observed data has failed a consistency check - No edited value follows. Data prior to 1 Jan 84 - observed data exceeded preselected climatological limits during conversion from historic TD-1440 files. No edited value follows.
 - 4 Observed data value invalid - no edited value follows.
 - 5 Data converted from historic TD-1440 exceeded known climatological extremes - no edited value follows.
 - 6 Complex QA indicates data are erroneous, and an edited value follows.
 - E Edited data value passes all system checks - no observed value present.
 - M Manually edited data value added to data set after original archival. Automated edit not performed on this item.
 - S Manually edited data passes all system checks.
-

Original Observation Data Section

FLD LEN: 3

ORIGINAL-OBSERVATION-NCDC SURFACE HOURLY identifier

The identifier that denotes the existence of ORIGINAL-OBSERVATION-NCDC SURFACE HOURLY information. This is used in specific instances where the original data from a previous format is stored for quality control purposes. In most cases, this section

is not included, since original input data sources are always maintained/archived at NCDC.

DOM: A specific domain comprised of the ASCII character set.

QNN: The following may be occur from 0 to 99 times, for NCDC NCDC SURFACE HOURLY:

ORIGINAL-OBSERVATION-NCDC SURFACE HOURLY original source codes and flags

FLD LEN: 5

ORIGINAL-OBSERVATION-NCDC SURFACE HOURLY source codes and flags

The original source codes and flags from NCDC SURFACE HOURLY, for possible future use in ISH database quality control.

DOM: A specific domain comprised of the ASCII character set.

For each original NCDC SURFACE HOURLY data record, the source code 1 and 2, and flag 1 and 2 original values are stored as follows:

QNN@1234@1234@1234 where:

QNN = indicator for section

@ = element identifier (see below)

1234 = source code 1, source code 2, flag 1, and flag 2 sequentially, for each element as defined in original DSI-3280.

Element Identifiers (@) as mentioned above, with the original DS3280 element that it refers to (eg, A = element ALC):

A ALC
B ALM
C ALTP
D CC51
E CLC
F CLM
G CLHT
H CLT
I C2C3
J DPTC
K DPTP
L HZVS
M PRES
N PWITH
O PWVC
P RHUM
Q SLVP
R TMCD
S TMPD
T TMPW
U TSCE
V TSKC
W WD16
X WIND
Y WND2

FLD LEN: 6

ORIGINAL-OBSERVATION-NCDC SURFACE HOURLY data value

The original data value from NCDC SURFACE HOURLY, as defined for the element above, for possible future use in ISH database quality control.

DOM: A specific domain comprised of the ASCII character set.

7. **Start Date:**
1900, but the date will vary greatly 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: ncdc.orders@noaa.gov
13. **Archiving Data Centers:**

Air Force Combat Climatology Center (AFCCC)
National Climatic Data Center
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: ncdc.info@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, US Navy stations, and US National Weather Service stations.

17. **Revision Date:** N/A

18. **Source Data Sets:**

AFCCC USAF SURFACE HOURLY Surface Hourly, NCDC DS3280 Surface Hourly, NCDC DS3240 Hourly Precipitation. AFCCC USAF SURFACE HOURLY includes over 100 source datasets, while NCDC DS3280 includes several original input sources; so over 100 original input sources are included in the current ISD archive. Beginning in 2006, additional data sources are being added, and will be documented here as they become available online.

19. **Essential Companion Data Sets:** N/A

20. **Derived Data Sets:** Global summary of day for 1929-present

21. **References:** N/A

22. **Summary:**

The Integrated Surface Database is composed of worldwide surface weather observations from about 20,000 stations, collected and stored from sources such as the Automated Weather Network (AWN), the Global Telecommunications System (GTS), the Automated Surface Observing System (ASOS), and data keyed from paper forms. Most digital observations are decoded either at operational centers and forwarded to the Federal Climate Complex (FCC) in Asheville, NC, or decoded at the FCC. The US Air Force Combat Climatology Center (AFCCC), the National Climatic Data Center (NCDC), and the US Navy's Fleet Numerical Meteorological and Oceanographical Command Detachment (FNMOD), make up the FCC in

Asheville, NC. Each agency is responsible for data ingest, quality control, and customer support for surface climatological data. All data are now stored in a single ASCII format. The database is used in climatological applications by numerous DoD and civilian customers.

ISD (identical to ISH) refers to the digital database and format in which hourly, synoptic (3-hourly), and various other weather/climate observations are stored. The format conforms to Federal Information Processing Standards (FIPS). The 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 data are sorted by station-year-month-day-hour-minute. This document provides complete documentation for the database and its format.