GLOBAL SUMMARY OF THE MONTH (GSOM) DATA FILES

v1.0.3 Last Updated: 5/15/2023

1. INTRODUCTION

1.1 OVERVIEW

The Global Summary Of The Month (GSOM) Data Files contain quality controlled monthly summaries of more than 50 elements (max temp, snow, etc.) computed from stations in the Global Historical Climatology Network (GHCN)-Daily dataset. These include non-US stations, providing a global product from 1763 to present that is updated weekly.
This is not to be confused with GHCN-Monthly, which only contains temperature and precipitation elements and which include bias corrected data (which are not available in the first release of GSOM/GSOY). A description of the files are included below in Section 1.3.

1.2 ACCESS

The GSOM Data Files can be accessed at the following location:

https://www.ncei.noaa.gov/data/global-summary-of-the-month/

1.3 DOWNLOADING

There are three sets of individual files that are included as part of the HPD Digital Inventory Reports:

a. XXY########.csv (GSOM Station Data File Name)

XXY######## is the GHCN ID for the station in question, where:

XX = FIPS Country Code Two-Letter Identifier
Y = Station Network Code (Identifies The Station Numbering System Used)

Valid Station Network Codes:

0 = unspecified (station identified by up to eight

alphanumeric characters)
1 = Community Collaborative Rain, Hail,and Snow (CoCoRaHS)
based identification number. To ensure consistency with
with GHCN Daily and GSOM, all numbers in the original CoCoRaHS
ID have been left-filled to make them all four digits long.
In addition, the characters "-" and "_" have been removed
to ensure that the IDs do not exceed 11 characters when
preceded by "US1". For example, the CoCoRaHS ID
"AZ-MR-156" becomes "US1AZMR0156" in GSOM
C = U.S. Cooperative Network identification number (last six
characters of the GHCN ID)
E = Identification number used in the ECA&D (European Climate Assessment and Dataset)
non-blended dataset
M = World Meteorological Organization ID (last five
characters of the GHCN ID)
N = Identification number used in data supplied by a
National Meteorological or Hydrological Center
R = U.S. Interagency Remote Automatic Weather Station (RAWS)
identifier
S = U.S. Natural Resources Conservation Service SNOwpack
TELemtry (SNOTEL) station identifier
W = WBAN identification number (last five characters of the
GHCN ID)

######### = Actual Station ID (Format Is Dependent on the Station Network Code)
.csv = Comma-Delimited File Format Extension (can be opened in Excel, OpenOffice, etc.)

For a complete list of stations and their Metadata, please see:
https://www.ncei.noaa.gov/data/global-historical-climatology-network-daily/doc/ghcnd-stations.txt

The following is the format of the data records that are contained within the GSOM Files (line spacing shown below between element groups/attributes does NOT imply spacing within the GSOM Data Files):

"STATION" = GHCN ID (see above for further explanation)

"DATE" = YYYY-MM where YYYY is 4-digit year and MM is 2-digit month

"ADPT" = Monthly Average Dew Point Temperature. Average of daily dew point temperatures given in
Celsius or Fahrenheit depending on user specification. Missing if more than 5 days within the month are
missing or flagged or if more than 3 consecutive values within the month are missing or flagged.
DaysMissing: Flag indicating number of days missing or flagged (from 1 to 5).
"ADPT_ATTRIBUTES" = a,M,Q,S where:
a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided
M = GHCN-Daily Dataset Measurement Flag (see Section 1.3.a.ii for more details)
Q = GHCN-Daily Dataset Quality Flag (see Section 1.3.a.iii for more details)
S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)

"ASLP" = Monthly Average Sea Level Pressure. Average of daily sea level pressures given in hPa or
inches of mercury depending on user specification. Missing if more than 5 days within the month are
missing or flagged or if more than 3 consecutive values within the month are missing or flagged.
DaysMissing: Flag indicating number of days missing or flagged (from 1 to 5).
"ASLP_ATTRIBUTES" = a,M,Q,S where:
a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided
M = GHCN-Daily Dataset Measurement Flag (see Section 1.3.a.ii for more details)
Q = GHCN-Daily Dataset Quality Flag (see Section 1.3.a.iii for more details)
S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)

"ASTP" = Monthly Average Station Level Pressure. Average of daily station level pressures given in hPa or
inches of mercury depending on user specification. Missing if more than 5 days within the month are
missing or flagged or if more than 3 consecutive values within the month are missing or flagged.
DaysMissing: Flag indicating number of days missing or flagged (from 1 to 5).
"ASTP_ATTRIBUTES" = a,M,Q,S where:
a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided
M = GHCN-Daily Dataset Measurement Flag (see Section 1.3.a.ii for more details)
Q = GHCN-Daily Dataset Quality Flag (see Section 1.3.a.iii for more details)
S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)

"AWBT" = Monthly Average Wet Bulb Temperature. Average of daily wet bulb temperatures given in
Celsius or Fahrenheit depending on user specification. Missing if more than 5 days within the month are
missing or flagged or if more than 3 consecutive values within the month are missing or flagged.
DaysMissing: Flag indicating number of days missing or flagged (from 1 to 5).
"AWBT_ATTRIBUTES" = a,M,Q,S where:
a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided
M = GHCN-Daily Dataset Measurement Flag (see Section 1.3.a.ii for more details)
Q = GHCN-Daily Dataset Quality Flag (see Section 1.3.a.iii for more details)

S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)

"AWND" = Monthly Average Wind Speed. Given in miles per hour or meters per second depending on user specification. Missing if more than 5 days within the month are missing or flagged or if more than 3 consecutive values within the month are missing or flagged. DaysMissing: Flag indicating number of days missing or flagged (from 1 to 5).

"AWND_ATTRIBUTES" = a,S where:

a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided

S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)

"CDSD" = Cooling Degree Days (season-to-date). Running total of monthly cooling degree days through the end of the most recent month. Each month is summed to produce a season-to-date total. Season starts in January in Northern Hemisphere and July in Southern Hemisphere. Given in Celsius or Fahrenheit degrees depending on user specification.

"CDSD_ATTRIBUTES" = S where:

S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)

"CLDD" = Cooling Degree Days. Computed when daily average temperature is more than 65 degrees Fahrenheit/18.3 degrees Celsius. CDD = mean daily temperature - 65 degrees Fahrenheit/18.3 degrees Celsius. Each day is summed to produce a monthly total. Given in Celsius or Fahrenheit degrees depending on user specification.

"CLDD_ATTRIBUTES" = a,S where:

a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided

S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)

"DP01" = Number of days with >= 0.01 inch/0.254 millimeter in the month.

Note: values originally recorded in inches as 0.01 inch are stored as 0.3 millimeters in GHCN-Daily; technically, this test is for values greater than or equal to 0.3 millimeter.

"DP01_ATTRIBUTES" = a,S where:

a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided

S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)

"DP10" = Number of days with >= 0.1 inch/2.54 millimeters in the month.

Note: values originally recorded in inches as 0.1 inch are stored as 2.5 millimeters in GHCN-Daily; technically, this test is for values greater than or equal to 2.5 millimeter.

"DP10_ATTRIBUTES" = a,S where:

a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided

S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)

"DP1X" = Number of days with >= 1.00 inch/25.4 millimeters in the month.
"DP1X_ATTRIBUTES" = a,S where:
a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided
S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)

"DSND" = Number of days with snow depth >= 1 inch/25 millimeters.
"DSND_ATTRIBUTES" = a,S where:
a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided
S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)

"DSNW" = Number of days with snowfall >= 1 inch/25 millimeters
"DSNW_ATTRIBUTES" = a,S where:
a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided
S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)

"DT00" = Number of days with maximum temperature <= 0 degrees Fahrenheit/-17.8 degrees Celsius.
"DT00_ATTRIBUTES" = a,S where:
a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided
S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)

"DT32" = Number of days with minimum temperature <= 32 degrees Fahrenheit/0 degrees Celsius.
"DT32_ATTRIBUTES" = a,S where:
a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided
S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)

"DX32" = Number of days with maximum temperature <= 32 degrees Fahrenheit/0 degrees Celsius.
"DX32_ATTRIBUTES" = a,S where:
a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided
S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)

"DX70" = Number of days with maximum temperature >= 70 degrees Fahrenheit/21.1 degrees Celsius.
"DX70_ATTRIBUTES" = a,S where:
a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided
S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)

"DX90" = Number of days with maximum temperature >= 90 degrees Fahrenheit/32.2 degrees Celsius
"DX90_ATTRIBUTES" = a,S where:
a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided

S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)

"DYFG" = Number of Days with Fog
"DYFG_ATTRIBUTES" = No Attributes are included with DYFG (will be blank)

"DYHF" = Number of Days with Heavy Fog (visibility less than 1/4 statute mile)
"DYHF_ATTRIBUTES" = No Attributes are included with DYHF (will be blank)

"DYNT" = Day of month of extreme minimum temperature YYYYMMDD
if it occurs more than once, it's the last date during the month for which it occurred
"DYNT_ATTRIBUTES" = a,S where:
d = + if there's more than one date during the month when EMNT value occurred more than once
blank if it only occurred once
a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided
S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)

"DYSD" = Day of month of highest daily snow depth YYYYMMDD
if it occurs more than once, it's the last date during the month for which it occurred
"DYSD_ATTRIBUTES" = a,S where:
d = + if there's more than one date during the month when EMSD value occurred more than once
blank if it only occurred once
a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided
S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)

"DYSN" = Day of month of highest daily snowfall YYYYMMDD
if it occurs more than once, it's the last date during the month for which it occurred
"DYSN_ATTRIBUTES" = a,S where:
d = + if there's more than one date during the month when EMSN value occurred more than once
blank if it only occurred once
a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided
S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)

"DYTS" = Number of Days with Thunderstorms
"DYTS_ATTRIBUTES" = No Attributes are included with DYTS (will be blank)

"DYXP" = Day of month of highest daily total of precipitation YYYYMMDD
if it occurs more than once, it's the last date during the month for which it occurred
"DYXP_ATTRIBUTES" = a,S where:

d = + if there's more than one date during the month when EMXP value occurred more than once
blank if it only occurred once
a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided
S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)

"DYXT" = Day of month with extreme maximum temperature YYYYMMDD
if it occurs more than once, it's the last date during the month for which it occurred
"DYXT_ATTRIBUTES" = a,S where:
d = + if there's more than one date during the month when EMXT value occurred more than once
blank if it only occurred once
a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided
S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)

"EMNT" = Extreme minimum temperature for month. Lowest daily minimum temperature for the
month. Given in Celsius or Fahrenheit depending on user specification.
"EMNT_ATTRIBUTES" = a,S,cc,d where:
a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided
blank if no days are missing or flagged
S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)
cc = two-digit date during the month when the EMNT value occurred; if it occurs more than once,
it's the last date during the month for which it occurred
(originates from the DYNT element within the Raw GSOM Files)
d = + if there's more than one date during the month when EMNT value occurred more than once
blank if it only occurred once
(originates from the DYNT element within the Raw GSOM Files)

"EMSD" = Highest daily snow depth in the month. Given in inches or millimeters depending on user
specification.
"EMSD_ATTRIBUTES" = a,M,S,cc,d where:
a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided
blank if no days are missing or flagged
M = GHCN-Daily Dataset Measurement Flag (see Section 1.3.a.ii for more details)
S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)
cc = two-digit date during the month when the EMSD value occurred; if it occurs more than once,
it's the last date during the month for which it occurred
(originates from the DYSD element within the Raw GSOM Files)
d = + if there's more than one date during the month when EMSD value occurred more than once
blank if it only occurred once

(originates from the DYSD element within the Raw GSOM Files)

"EMSN" = Highest daily snowfall in the month. Given in inches or millimeters depending on user specification.

"EMSN_ATTRIBUTES" = a,M,S,cc,d where:

a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided blank if no days are missing or flagged

M = GHCN-Daily Dataset Measurement Flag (see Section 1.3.a.ii for more details)

S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)

cc = two-digit date during the month when the EMSN value occurred; if it occurs more than once, it's the last date during the month for which it occurred

(originates from the DYSN element within the Raw GSOM Files)

d = + if there's more than one date during the month when EMSN value occurred more than once blank if it only occurred once

(originates from the DYSN element within the Raw GSOM Files)

"EMXP" = Highest daily total of precipitation in the month. Given in inches or millimeters depending on user specification.

"EMXP_ATTRIBUTES" = a,M,S,cc,d where:

a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided blank if no days are missing or flagged

M = GHCN-Daily Dataset Measurement Flag (see Section 1.3.a.ii for more details)

S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)

cc = two-digit date during the month when the EMXP value occurred; if it occurs more than once, it's the last date during the month for which it occurred

(originates from the DYXP element within the Raw GSOM Files)

d = + if there's more than one date during the month when EMXP value occurred more than once blank if it only occurred once

(originates from the DYXP element within the Raw GSOM Files)

"EMXT" = Extreme maximum temperature for month. Highest daily maximum temperature for the month. Given in Celsius or Fahrenheit depending on user specification.

"EMXT_ATTRIBUTES" = a,S,cc,d where:

a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided blank if no days are missing or flagged

S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)

cc = two-digit date during the month when the EMXT value occurred; if it occurs more than once, it's the last date during the month for which it occurred

(originates from the DYXT element within the Raw GSOM Files)
d = + if there's more than one date during the month when EMXT value occurred more than once
blank if it only occurred once
(originates from the DYXT element within the Raw GSOM Files)

"EVAP" = Total Monthly Evaporation. Given in inches or millimeters depending on user specification. Measurement Flags: T is used for trace amount, a is used for any accumulation within a month that includes missing days. If no days are missing, no flag is used. Source Flag: Source flag from GHCN-Daily (see separate documentation for GHCN-Daily). Days Miss Flag: Number of days missing or flagged.

"EVAP_ATTRIBUTES" = a,M,Q,S where:
a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided
M = GHCN-Daily Dataset Measurement Flag (see Section 1.3.a.ii for more details)
Q = GHCN-Daily Dataset Quality Flag (see Section 1.3.a.iii for more details)
S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)

"HDSD" = Heating Degree Days (season-to-date). Running total of monthly heating degree days through the end of the most recent month. Each month is summed to produce a season-to-date total. Season starts in July in Northern Hemisphere and January in Southern Hemisphere. Given in Celsius or Fahrenheit degrees depending on user specification.

"HDSD_ATTRIBUTES" = S where:
S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)

"HNyz" = Highest minimum soil temperature for the month given in Celsius or Fahrenheit depending on user specification. Missing if more than 5 days within the month are missing or flagged or if more than 3 consecutive values within the month are missing or flagged. DaysMissing: Flag indicating number of days missing or flagged (from 1 to 5).
(See Section 1.3.a.i for details on what 'y' and 'z' mean within this element header of HNyz.)

"HNyz_ATTRIBUTES" = a,M,Q,S,y,z where:
a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided
M = GHCN-Daily Dataset Measurement Flag (see Section 1.3.a.ii for more details)
Q = GHCN-Daily Dataset Quality Flag (see Section 1.3.a.iii for more details)
S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)
y = Ground Cover Code
z = Soil Depth Code

"HTDD" = Heating Degree Days. Computed when daily average temperature is less than 65 degrees Fahrenheit/18.3 degrees Celsius. HDD = 65(F)/18.3(C) - mean daily temperature. Each day is summed to

produce a monthly total. Given in Celsius or Fahrenheit degrees depending on user specification.

"HTDD_ATTRIBUTES" = a,S where:

a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided

S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)

"HXyz" = Highest maximum soil temperature for the month given in Celsius or Fahrenheit depending on user specification. Missing if more than 5 days within the month are missing or flagged or if more than 3 consecutive values within the month are missing or flagged. DaysMissing: Flag indicating number of days missing or flagged (from 1 to 5).

(See Section 1.3.a.i for details on what 'y' and 'z' mean within this element header of HXyz.)

"HXyz_ATTRIBUTES" = a,M,Q,S,y,z where:

a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided

M = GHCN-Daily Dataset Measurement Flag (see Section 1.3.a.ii for more details)

Q = GHCN-Daily Dataset Quality Flag (see Section 1.3.a.iii for more details)

S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)

y = Ground Cover Code

z = Soil Depth Code

"LNyz" = Lowest minimum soil temperature for the month given in Celsius or Fahrenheit depending on user specification. Missing if more than 5 days within the month are missing or flagged or if more than 3 consecutive values within the month are missing or flagged. DaysMissing: Flag indicating number of days missing or flagged (from 1 to 5).

(See Section 1.3.a.i for details on what 'y' and 'z' mean within this element header of LNyz.)

"LNyz_ATTRIBUTES" = a,M,Q,S,y,z where:

a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided

M = GHCN-Daily Dataset Measurement Flag (see Section 1.3.a.ii for more details)

Q = GHCN-Daily Dataset Quality Flag (see Section 1.3.a.iii for more details)

S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)

y = Ground Cover Code

z = Soil Depth Code

"LXyz" = Lowest maximum soil temperature for the month given in Celsius or Fahrenheit depending on user specification. Missing if more than 5 days within the month are missing or flagged or if more than 3 consecutive values within the month are missing or flagged. DaysMissing: Flag indicating number of days missing or flagged (from 1 to 5).

(See Section 1.3.a.i for details on what 'y' and 'z' mean within this element header of LXyz.)

"LXyz_ATTRIBUTES" = a,M,Q,S,y,z where:

a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided

M = GHCN-Daily Dataset Measurement Flag (see Section 1.3.a.ii for more details)
Q = GHCN-Daily Dataset Quality Flag (see Section 1.3.a.iii for more details)
S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)
y = Ground Cover Code
z = Soil Depth Code

"MNPN" = Monthly Mean Minimum Temperature of evaporation pan water. Given in Celsius or Fahrenheit depending on user specification. Missing if more than 5 days within the month are missing or flagged or if more than 3 consecutive values within the month are missing or flagged. DaysMissing: Flag indicating number of days missing or flagged (from 1 to 5).

"MNPN_ATTRIBUTES" = a,M,Q,S where:
a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided
M = GHCN-Daily Dataset Measurement Flag (see Section 1.3.a.ii for more details)
Q = GHCN-Daily Dataset Quality Flag (see Section 1.3.a.iii for more details)
S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)

"MNyz" = Monthly Mean of daily minimum soil temperature given in Celsius or Fahrenheit depending on user specification. Missing if more than 5 days within the month are missing or flagged or if more than 3 consecutive values within the month are missing or flagged. DaysMissing: Flag indicating number of days missing or flagged (from 1 to 5).

(See Section 1.3.a.i for details on what 'y' and 'z' mean within this element header of MNyz.)

"MNyz_ATTRIBUTES" = a,M,Q,S,y,z where:
a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided
M = GHCN-Daily Dataset Measurement Flag (see Section 1.3.a.ii for more details)
Q = GHCN-Daily Dataset Quality Flag (see Section 1.3.a.iii for more details)
S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)
y = Ground Cover Code
z = Soil Depth Code

"MXPN" = Monthly Mean Maximum Temperature of evaporation pan water. Given in Celsius or Fahrenheit depending on user specification. Missing if more than 5 days within the month are missing or flagged or if more than 3 consecutive values within the month are missing or flagged. DaysMissing: Flag indicating number of days missing or flagged (from 1 to 5).

"MXPN_ATTRIBUTES" = a,M,Q,S where:
a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided
M = GHCN-Daily Dataset Measurement Flag (see Section 1.3.a.ii for more details)
Q = GHCN-Daily Dataset Quality Flag (see Section 1.3.a.iii for more details)

S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)

"MXyz" = Monthly Mean of daily maximum soil temperature given in Celsius or Fahrenheit
depending on user specification. Missing if more than 5 days within the month are missing or flagged or if more than 3 consecutive values within the month are missing or flagged. DaysMissing: Flag indicating number of days missing or flagged (from 1 to 5).
(See Section 1.3.a.i for details on what 'y' and 'z' mean within this element header of MXyz.)
"MXyz_ATTRIBUTES" = a,M,Q,S,y,z where:
a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided
M = GHCN-Daily Dataset Measurement Flag (see Section 1.3.a.ii for more details)
Q = GHCN-Daily Dataset Quality Flag (see Section 1.3.a.iii for more details)
S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)
y = Ground Cover Code
z = Soil Depth Code

"PRCP" = Total Monthly Precipitation. Given in inches or millimeters depending on user
specification. Measurement Flags: T is used for trace amount, a is used for any accumulation within a month that includes missing days. If no days are missing, no flag is used.
"PRCP_ATTRIBUTES" = a,M,Q,S where:
a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided
M = GHCN-Daily Dataset Measurement Flag (see Section 1.3.a.ii for more details)
Q = GHCN-Daily Dataset Quality Flag (see Section 1.3.a.iii for more details)
S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)

"PSUN" = Monthly Average of the daily percents of possible sunshine. Days Miss Flag: Number of
days missing or flagged.
"PSUN_ATTRIBUTES" = a,S where:
a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided
S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)

"RHAV" = Monthly Average Relative Humidity. Average of daily relative humidity values given in percent. Missing if more than 5 days within the month are
missing or flagged or if more than 3 consecutive values within the month are missing or flagged.
DaysMissing: Flag indicating number of days missing or flagged (from 1 to 5).
"RHAV_ATTRIBUTES" = a,M,Q,S where:
a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided
M = GHCN-Daily Dataset Measurement Flag (see Section 1.3.a.ii for more details)
Q = GHCN-Daily Dataset Quality Flag (see Section 1.3.a.iii for more details)

S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)

"RHMN" = Monthly Average of Minimum Relative Humidity. Average of daily minimum relative humidity values given in percent. Missing if more than 5 days within the month are missing or flagged or if more than 3 consecutive values within the month are missing or flagged. DaysMissing: Flag indicating number of days missing or flagged (from 1 to 5).

"RHMN_ATTRIBUTES" = a,M,Q,S where:

a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided
M = GHCN-Daily Dataset Measurement Flag (see Section 1.3.a.ii for more details)
Q = GHCN-Daily Dataset Quality Flag (see Section 1.3.a.iii for more details)
S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)

"RHMX" = Monthly Average of Maximum Relative Humidity. Average of daily maximum relative humidity values given in percent. Missing if more than 5 days within the month are missing or flagged or if more than 3 consecutive values within the month are missing or flagged. DaysMissing: Flag indicating number of days missing or flagged (from 1 to 5).

"RHMX_ATTRIBUTES" = a,M,Q,S where:

a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided
M = GHCN-Daily Dataset Measurement Flag (see Section 1.3.a.ii for more details)
Q = GHCN-Daily Dataset Quality Flag (see Section 1.3.a.iii for more details)
S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)

"SNOW" = Total Monthly Snowfall. Given in inches or millimeters depending on user specification. Measurement Flags: T is used for trace amount, a is used for any accumulation within a month that includes missing days. If no days are missing, no flag is used.

"SNOW_ATTRIBUTES" = a,M,Q,S where:

a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided
M = GHCN-Daily Dataset Measurement Flag (see Section 1.3.a.ii for more details)
Q = GHCN-Daily Dataset Quality Flag (see Section 1.3.a.iii for more details)
S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)

"TAVG" = Average Monthly Temperature. Computed by adding the unrounded monthly maximum and minimum temperatures and dividing by 2. Given in Celsius or Fahrenheit depending on user specification. Missing if more than 5 days within the month are missing or flagged or if more than 3 consecutive values within the month are missing or flagged. DaysMissing: Flag indicating number of days missing or flagged (from 1 to 5).

"TAVG_ATTRIBUTES" = a,S where:

a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided
S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)

"TMAX" = Monthly Maximum Temperature. Average of daily maximum temperature given in Celsius or Fahrenheit depending on user specification. Missing if more than 5 days within the month are missing or flagged or if more than 3 consecutive values within the month are missing or flagged. DaysMissing: Flag indicating number of days missing or flagged (from 1 to 5).

"TMAX_ATTRIBUTES" = a,M,Q,S where:
a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided
M = GHCN-Daily Dataset Measurement Flag (see Section 1.3.a.ii for more details)
Q = GHCN-Daily Dataset Quality Flag (see Section 1.3.a.iii for more details)
S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)

"TMIN" = Monthly Minimum Temperature. Average of daily minimum temperature given in Celsius or Fahrenheit depending on user specification. Missing if more than 5 days within the month are missing or flagged or if more than 3 consecutive values within the month are missing or flagged. DaysMissing: Flag indicating number of days missing or flagged (from 1 to 5).

"TMIN_ATTRIBUTES" = a,M,Q,S where:
a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided
M = GHCN-Daily Dataset Measurement Flag (see Section 1.3.a.ii for more details)
Q = GHCN-Daily Dataset Quality Flag (see Section 1.3.a.iii for more details)
S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)

"TSUN" = Daily total sunshine in minutes. Days Miss Flag: Number of days missing or flagged.

"TSUN_ATTRIBUTES" = a,S where:
a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided
S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)

"WDF1" = Wind Direction for Maximum Wind Speed/Fastest 1-Minute (WSF1). Given in 360-degree compass point directions (e.g. 360 = north, 180 = south, etc.). Missing if more than 5 days within the month are missing or flagged or if more than 3 consecutive values within the month are missing or flagged. DaysMissing: Flag indicating number of days missing or flagged (from 1 to 5).

"WDF1_ATTRIBUTES" = a,S where:
a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided
S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)

"WDF2" = Wind Direction for Maximum Wind Speed/Fastest 2-Minute (WSF2). Given in 360-degree compass point directions (e.g. 360 = north, 180 = south, etc.).

"WDF2_ATTRIBUTES" = a,S where:

a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided

S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)

"WDF5" = Wind Direction for Peak Wind Gust Speed. Fastest 5-second (WSF5). Given in 360-degree compass point directions (e.g. 360 = north, 180 = south, etc.). Missing if more than 5 days within the month are missing or flagged or if more than 3 consecutive values within the month are missing or flagged. DaysMissing: Flag indicating number of days missing or flagged (from 1 to 5).

"WDF5_ATTRIBUTES" = a,S where:

a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided

S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)

"WDFG" = Wind Direction for Peak Wind Gust Speed (WSFG). Given in 360-degree compass point directions (e.g. 360 = north, 180 = south, etc.). Missing if more than 5 days within the month are missing or flagged or if more than 3 consecutive values within the month are missing or flagged. DaysMissing: Flag indicating number of days missing or flagged (from 1 to 5).

"WDFG_ATTRIBUTES" = a,S where:

a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided

S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)

"WDFI" = Direction of highest instantaneous wind speed (WDFI). Given in 360-degree compass point directions (e.g. 360 = north, 180 = south, etc.). Missing if more than 5 days within the month are missing or flagged or if more than 3 consecutive values within the month are missing or flagged. DaysMissing: Flag indicating number of days missing or flagged (from 1 to 5).

"WDFI_ATTRIBUTES" = a,S where:

a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided

S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)

"WDFM" = Wind Direction for Maximum Wind Speed/Fastest Mile (WSFM). Given in 360-degree compass point directions (e.g. 360 = north, 180 = south, etc.).

"WDFM_ATTRIBUTES" = a,S where:

a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided

S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)

"WDMV" = Total Monthly Wind Movement over evaporation pan. Given in miles or kilometers depending on user specification. Days Miss Flag: Number of days missing or flagged.

"WDMV_ATTRIBUTES" = a,M,Q,S where:

a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided

M = GHCN-Daily Dataset Measurement Flag (see Section 1.3.a.ii for more details)
Q = GHCN-Daily Dataset Quality Flag (see Section 1.3.a.iii for more details)
S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)

"WSF1" = Maximum Wind Speed/Fastest 1-minute. Maximum wind speed for the month reported as the fastest 1-minute. Given in miles per hour or meters per second depending on user specification. Missing if more than 5 days within the month are missing or flagged or if more than 3 consecutive values within the month are missing or flagged. DaysMissing: Flag indicating number of days missing or flagged (from 1 to 5).
"WSF1_ATTRIBUTES" = a,S where:
a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided
S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)

"WSF2" = Maximum Wind Speed/Fastest 2-minute. Maximum wind speed for the month reported as the fastest 2-minute. Given in miles per hour or meters per second depending on user specification. Missing if more than 5 days within the month are missing or flagged or if more than 3 consecutive values within the month are missing or flagged. DaysMissing: Flag indicating number of days missing or flagged (from 1 to 5).
"WSF2_ATTRIBUTES" = a,S where:
a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided
S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)

"WSF5" = Peak Wind Gust Speed. Fastest 5-second wind. Maximum wind gust for the month. Given in miles per hour or second depending on user specification. Missing if more than 5 days within the month are missing or flagged or if more than 3 consecutive values within the month are missing or flagged. DaysMissing: Flag indicating number of days missing or flagged (from 1 to 5).
"WSF5_ATTRIBUTES" = a,S where:
a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided
S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)

"WSFG" = Peak Wind Gust Speed. Maximum wind gust for the month. Given in miles per hour or second depending on user specification. Missing if more than 5 days within the month are missing or flagged or if more than 3 consecutive values within the month are missing or flagged. DaysMissing: Flag indicating number of days missing or flagged (from 1 to 5).
"WSFG_ATTRIBUTES" = a,S where:
a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided
S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)

"WSFI" = Highest instantaneous wind speed for the month. Given in miles per hour or second depending on user specification. Missing if more than 5 days within the month are missing or flagged or if more than 3 consecutive values within the month are missing or flagged. DaysMissing: Flag indicating number of days missing or flagged (from 1 to 5).

"WSFI_ATTRIBUTES" = a,S where:

a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided

S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)

"WSFM" = Maximum Wind Speed/Fastest Mile. Maximum wind speed for the month reported as the fastest mile. Given in miles per hour or meters per second depending on user specification. Missing if more than 5 days within the month are missing or flagged or if more than 3 consecutive values within the month are missing or flagged. DaysMissing: Flag indicating number of days missing or flagged (from 1 to 5).

"WSFM_ATTRIBUTES" = a,S where:

a = DaysMissing (Numeric value): The number of days (from 1 to 5) missing or flagged is provided

S = GHCN-Daily Dataset Source Code (see Section 1.3.a.iv for more details)

i. For the HNyz, HXyz, LNyz, LXyz, MNyz and MXyz elements, the "y" and "z" values within the Element Type Name are as follows:

For "y":

1 = grass
2 = fallow
3 = bare ground
4 = brome grass
5 = sod
6 = straw mulch
7 = grass muck
8 = bare muck
0 = unknown

For "z":

1 = 2 inches or 5 centimeters depth
2 = 4 inches or 10 centimeters depth
3 = 8 inches or 20 centimeters depth
4 = 20 inches or 50 centimeters depth
5 = 40 inches or 100 centimeters depth
6 = 60 inches or 150 centimeters depth
7 = 72 inches or 180 centimeters depth

0 = unknown

ii. GHCN-Daily Dataset Measurement Flags (as of 1/9/2017):

Blank = no measurement information applicable
B = precipitation total formed from two 12-hour totals
D = precipitation total formed from four six-hour totals
H = represents highest or lowest hourly temperature (TMAX or TMIN) or the average of hourly values (TAVG)
K = converted from knots
L = temperature appears to be lagged with respect to reported hour of observation
O = converted from oktas
P = identified as "missing presumed zero" in DSI 3200 and 3206
T = trace of precipitation, snowfall, or snow depth
W = converted from 16-point WBAN code (for wind direction)

iii. GHCN-Daily Dataset Quality Flags (as of 1/9/2017):

Blank = did not fail any quality assurance check
D = failed duplicate check
G = failed gap check
I = failed internal consistency check
K = failed streak/frequent-value check
L = failed check on length of multiday period
M = failed megaconsistency check
N = failed naught check
O = failed climatological outlier check
R = failed lagged range check
S = failed spatial consistency check
T = failed temporal consistency check
W = temperature too warm for snow
X = failed bounds check
Z = flagged as a result of an official Datzilla investigation

iv. GHCN-Daily Dataset Source Codes (as of 1/9/2017):

Blank = No source (i.e., data value missing)

0 = U.S. Cooperative Summary of the Day (NCDC DSI-3200)
6 = CDMP Cooperative Summary of the Day (NCDC DSI-3206)
7 = U.S. Cooperative Summary of the Day -- Transmitted via WxCoder3 (NCDC DSI-3207)
A = U.S. Automated Surface Observing System (ASOS) real-time data (since January 1, 2006)
a = Australian data from the Australian Bureau of Meteorology
B = U.S. ASOS data for October 2000-December 2005 (NCDC DSI-3211)
b = Belarus update
C = Environment Canada
E = European Climate Assessment and Dataset (Klein Tank et al., 2002)
F = U.S. Fort data
G = Official Global Climate Observing System (GCOS) or other government-supplied data
H = High Plains Regional Climate Center real-time data
I = International collection (non U.S. data received through personal contacts)
K = U.S. Cooperative Summary of the Day data digitized from paper observer forms (from 2011 to present)
M = Monthly METAR Extract (additional ASOS data)
N = Community Collaborative Rain, Hail,and Snow (CoCoRaHS)
Q = Data from several African countries that had been "quarantined", that is, withheld from public release until permission was granted from the respective meteorological services
R = NCEI Reference Network Database (Climate Reference Network and Regional Climate Reference Network)
r = All-Russian Research Institute of Hydrometeorological Information-World Data Center
S = Global Summary of the Day (NCDC DSI-9618)
NOTE: "S" values are derived from hourly synoptic reports exchanged on the Global Telecommunications System (GTS). Daily values derived in this fashion may differ significantly from "true" daily data, particularly for precipitation (i.e., use with caution).
s = China Meteorological Administration/National Meteorological Information Center/

Climatic Data Center (http://cdc.cma.gov.cn)

T = SNOwpack TELemtry (SNOTEL) data obtained from the U.S. Department of Agriculture's Natural Resources Conservation Service

U = Remote Automatic Weather Station (RAWS) data obtained from the Western Regional Climate Center

u = Ukraine update

W = WBAN/ASOS Summary of the Day from NCDC's Integrated Surface Data (ISD).

X = U.S. First-Order Summary of the Day (NCDC DSI-3210)

Z = Datzilla official additions or replacements

z = Uzbekistan update

2. DATA

2.1 METADATA

The metadata for GSOM Stations are provided by NCEI's Metadata Team via its Historical Observing Metadata Repository (HOMR) Website. Please go to the NCEI Historical Observing Metadata Repository (HOMR) Website at https://www.ncei.noaa.gov/homr/ in order to access these particular Metadata reports.

An overview of the GSOM Dataset is also available at the following web link:
https://www.ncei.noaa.gov/access/metadata/landing-page/bin/iso?id=gov.noaa.ncdc:C00946

2.2 DATA

Global Summary Of The Month (GSOM) Data are available for access via the GSOM Raw Data Files at https://www.ncei.noaa.gov/data/global-summary-of-the-month/access

3. CONTACT

3.1 QUESTIONS AND FEEDBACK

NCEI.Orders@noaa.gov