GSOM (Global Summary of the Month) documentation

I. Description

The Global Summary of the Month (GSOM) dataset includes climate data for thousands of locations worldwide. Data files contain over 50 climatological variables computed from the summary of the day observations of the Global Historical Climatology Network Daily dataset (GHCN-D). A description of each of these is included below. GSOM data can be accessed at https://www.ncdc.noaa.gov/cdo-web/search?datasetid=GSOM or for bulk delivery at https://www.ncei.noaa.gov/data/gsom.

II. Format/Observation Definitions

Users are given the choice between the following two delivery formats:

1) Portable Document Format (PDF) output. All units are standard.

2) CSV file for use in spreadsheet applications. Users will be able to choose between standard or metric units with this option.

A. Data observations

Each record represents all selected observations (i.e. elements) available for a given station-month. The initial section of each record is ordered as follows with the following definitions:

STATION (11 characters) is the station identification code.

STATION_NAME (max 50 characters) is the name of the station (usually city/airport name). This is an optional output field.

LATITUDE (8 characters) is the latitude (decimated degrees w/Northern Hemisphere values > 0). This is an optional output field.

LONGITUDE (9 characters) is the longitude (decimated degrees w/Western Hemisphere values < 0 and Eastern Hemisphere values > 0). This is an optional output field.

ELEVATION (13 characters) is the elevation above mean sea level in meters (to nearest thousandth of a meter). This is an optional output field.

DATE is the year of the record (4 digits) followed by a month (2 digits).

GHCN-Daily Dataset Measurement Flag (M) These flags that pertain to temperature, precipitation and wind measurement are given in the attribute fields following many of the data variables described below as noted.

Blank = no measurement information applicable

A = value in precipitation or snow is a multi-day total, accumulated since last measurement (used on Daily Form pdf file)
B = precipitation total formed from two twelve-hour totals
D = precipitation total formed from four six-hour totals
H = represents highest or lowest hourly temperature (TMAX or TMIN) or 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)

Table A (variables)

AWND – Monthly Average Wind Speed. Given in miles per hour for PDF output and miles per hour or meters per second depending on user specification for CSV output. 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.

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 (values are given below in Table B)

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 Fahrenheit degrees in PDF output and Celsius or Fahrenheit degrees depending on user specification in CSV output.

CDSD_ATTRIBUTES – S where:

S = GHCN-Daily Dataset Source Code (values are given below in Table B)

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 Fahrenheit units on PDF output. CSV output is Fahrenheit or Celsius units 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 (values are given below in Table B)

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

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 (values are given below in Table B)

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

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 (values are given below in Table B)

DP1X – Number of days with >= 1 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 (values are given below in Table B)

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 (values are given below in Table B)

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 (values are given below in Table B)

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 (values are given below in Table B)

DT32 – Number of days with maximum 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 (values are given below in Table B)

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 (values are given below in Table B)

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 (values are given below in Table B)

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 (values are given below in Table B)

EMNT – Extreme minimum temperature for month. Lowest daily minimum temperature for the month. Given in Fahrenheit units on PDF output. CSV output is Fahrenheit or Celsius units 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
S = GHCN-Daily Dataset Source Code (values are given below in Table B)
cc = two-digit date during the month when the EMNT value occurred (always latest date if more than one occurrence)
d = + if there is more than one date of occurrence, blank if only one date of occurrence

EMSD – Highest daily snow depth in the month. Given in inches for PDF output. CSV output is 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
M = GHCN-Daily Dataset Measurement Flag (values are given below in Table C)
S = GHCN-Daily Dataset Source Code (values are given below in Table B)
cc = two-digit date during the month when the EMNT value occurred (always latest date if more than one occurrence)

d = + if there is more than one date of occurrence, blank if only one date of occurrence

EMSN – Highest daily snowfall in the month. Given in inches for PDF output. CSV output is 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
M = GHCN-Daily Dataset Measurement Flag (values are given below in Table C)
S = GHCN-Daily Dataset Source Code (values are given below in Table B)
cc = two-digit date during the month when the EMNT value occurred (always latest date if more than one occurrence)
d = + if there is more than one date of occurrence, blank if only one date of occurrence

EMXP – Highest daily total of precipitation in the month. Given in inches for PDF output. CSV output is 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
M = GHCN-Daily Dataset Measurement Flag (values are given below in Table C)
S = GHCN-Daily Dataset Source Code (values are given below in Table B)
cc = two-digit date during the month when the EMNT value occurred (always latest date if more than one occurrence)
d = + if there is more than one date of occurrence, blank if only one date of occurrence

EMXT – Extreme maximum temperature for month. Highest daily maximum temperature for the month. Given in Fahrenheit units on PDF output. CSV output is Fahrenheit or Celsius units 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
S = GHCN-Daily Dataset Source Code (values are given below in Table B)
cc = two-digit date during the month when the EMNT value occurred (always latest date if more than one occurrence)
d = + if there is more than one date of occurrence, blank if only one date of occurrence

EVAP – Total Monthly Evaporation. Given in inches for PDF output. CSV output is 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 (values are given below in Table C)

Q = GHCN-Daily Dataset Quality Flag (values are given below in Table D)
S = GHCN-Daily Dataset Source Code (values are given below in Table B)

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 Fahrenheit degrees in PDF output and Celsius or Fahrenheit degrees depending on user specification in CSV output.

HDSD_ATTRIBUTES – S where:

S = GHCN-Daily Dataset Source Code (values are given below in Table B)

HNyz – Highest minimum soil temperature for the month. Given in Fahrenheit for PDF output and Fahrenheit or Celsius depending on user specification for CSV output. 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. Note: "yz" portion of variable name correspond with values in Table E below.

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 (values are given below in Table C)
Q = GHCN-Daily Dataset Quality Flag (values are given below in Table D)
S = GHCN-Daily Dataset Source Code (values are given below in Table B)
y = ground cover code (see table E below)
z = soil depth code (see table E below)

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 Fahrenheit units on PDF output. CSV output is Fahrenheit or Celsius units 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 (values are given below in Table B)

HXyz – Highest maximum soil temperature for the month. Given in Fahrenheit for PDF output and Fahrenheit or Celsius depending on user specification for CSV output. 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. Note: "yz" portion of variable name correspond with values in Table E below.

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 (values are given below in Table C)
Q = GHCN-Daily Dataset Quality Flag (values are given below in Table D)
S = GHCN-Daily Dataset Source Code (values are given below in Table B)

y = ground cover code (see table E below)
z = soil depth code (see table E below)

LNyz – Lowest minimum soil temperature for the month. Given in Fahrenheit for PDF output and Fahrenheit or Celsius depending on user specification for CSV output. 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. Note: "yz" portion of variable name correspond with values in Table E below.

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 (values are given below in Table C)
Q = GHCN-Daily Dataset Quality Flag (values are given below in Table D)
S = GHCN-Daily Dataset Source Code (values are given below in Table B)
y = ground cover code (see table E below)
z = soil depth code (see table E below)

LXyz – Lowest maximum soil temperature for the month. Given in Fahrenheit for PDF output and Fahrenheit or Celsius depending on user specification for CSV output. 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. Note: "yz" portion of variable name correspond with values in Table E below.

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 (values are given below in Table C)
Q = GHCN-Daily Dataset Quality Flag (values are given below in Table D)
S = GHCN-Daily Dataset Source Code (values are given below in Table B)
y = ground cover code (see table E below)
z = soil depth code (see table E below)

MNPN – Monthly Mean Minimum Temperature of evaporation pan water. Given in Fahrenheit units for PDF output and Celsius or Fahrenheit units in CSV output 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.

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 (values are given below in Table C)
Q = GHCN-Daily Dataset Quality Flag (values are given below in Table D)
S = GHCN-Daily Dataset Source Code (values are given below in Table B)

MNyz – Monthly Mean of daily minimum soil temperature. Given in Fahrenheit for PDF output and Fahrenheit or Celsius depending on user specification for CSV output. 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.

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 (values are given below in Table C)
Q = GHCN-Daily Dataset Quality Flag (values are given below in Table D)
S = GHCN-Daily Dataset Source Code (values are given below in Table B)
y = ground cover code (see table E below)
z = soil depth code (see table E below)

MXPN – Monthly Mean Maximum Temperature of evaporation pan water. Given in Fahrenheit units for PDF output and Celsius or Fahrenheit units in CSV output 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.

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 (values are given below in Table C)
Q = GHCN-Daily Dataset Quality Flag (values are given below in Table D)
S = GHCN-Daily Dataset Source Code (values are given below in Table B)

MXyz – Monthly Mean of daily maximum soil temperature. Given in Fahrenheit for PDF output and Fahrenheit or Celsius depending on user specification for CSV output. 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.

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 (values are given below in Table C)
Q = GHCN-Daily Dataset Quality Flag (values are given below in Table D)
S = GHCN-Daily Dataset Source Code (values are given below in Table B)
y = ground cover code (see table E below)
z = soil depth code (see table E below)

PRCP – Total Monthly Precipitation. Given in inches for PDF output. CSV output is 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 (values are given below in Table C)
Q = GHCN-Daily Dataset Quality Flag (values are given below in Table D)
S = GHCN-Daily Dataset Source Code (values are given below in Table B)

PSUN – Monthly Average of the daily percents of possible sunshine.

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 (values are given below in Table B)

SNOW – Total Monthly Snowfall. Given in inches for PDF output. CSV output is 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.

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 (values are given below in Table C)
Q = GHCN-Daily Dataset Quality Flag (values are given below in Table D)
S = GHCN-Daily Dataset Source Code (values are given below in Table B)

TAVG – Average Monthly Temperature. Computed by adding the unrounded monthly/annual maximum and minimum temperatures and dividing by 2. Fahrenheit units on PDF output. CSV output is Fahrenheit or Celsius units 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.

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 (values are given below in Table B)

TMAX – Monthly Maximum Temperature. Average of daily maximum temperature given in Fahrenheit on PDF output. CSV output is given in Fahrenheit or Celsius 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.

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 (values are given below in Table C)
Q = GHCN-Daily Dataset Quality Flag (values are given below in Table D)
S = GHCN-Daily Dataset Source Code (values are given below in Table B)

TMIN – Monthly Minimum Temperature. Average of daily minimum temperature given in Fahrenheit units on PDF output. CSV output is given in Fahrenheit or Celsius units 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.

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 (values are given below in Table C)
Q = GHCN-Daily Dataset Quality Flag (values are given below in Table D)
S = GHCN-Daily Dataset Source Code (values are given below in Table B)

TSUN – Monthly total sunshine in minutes.

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 (values are given below in Table B)

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.

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 (values are given below in Table B)

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.). 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.

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 (values are given below in Table B)

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.

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 (values are given below in Table B)

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.

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 (values are given below in Table B)

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.

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 (values are given below in Table B)

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 (values are given below in Table B)

WDMV – Total Monthly Wind Movement over evaporation pan. Given in miles for PDF output and miles or kilometers depending on user specification for CSV output.

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 (values are given below in Table C)
Q = GHCN-Daily Dataset Quality Flag (values are given below in Table D)
S = GHCN-Daily Dataset Source Code (values are given below in Table B)

WSF1 - Maximum Wind Speed/Fastest 1-minute. Maximum wind speed for the month reported as the fastest 1-minute. Given in miles per hour for PDF output and miles per hour or meters per second depending on user specification for CSV output. 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.

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 (values are given below in Table B)

WSF2 – Maximum Wind Speed/Fastest 2-minute. Maximum wind speed for the month reported as the fastest 2-minute. Given in miles per hour for PDF output and miles per hour or meters per second depending on user specification for CSV output. 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.

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 (values are given below in Table B)

WSF5 – Peak Wind Gust Speed – Fastest 5-second wind. Maximum wind gust for the month. Given in miles per hour for PDF output and miles per hour or meters per second depending on user specification for CSV output. 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.

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 (values are given below in Table B)

WSFG – Peak Wind Gust Speed. Maximum wind gust for the month. Given in miles per hour for PDF output and miles per hour or meters per second depending on user specification for CSV output. 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.

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 (values are given below in Table B)

WSFI – Highest instantaneous wind speed for the month. Given in miles per hour for PDF output and miles per hour or meters per second depending on user specification for CSV output. 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.

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 (values are given below in Table B)

WSFM – Maximum Wind Speed/Fastest Mile. Maximum wind speed for the month reported as the fastest mile. Given in miles per hour for PDF output and miles per hour or meters per second depending on user specification for CSV output. 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.

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 (values are given below in Table B)

Table B - GHCN-Daily Dataset Source Codes:

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 Hydrometeorol 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

Table C - GHCN-Daily Dataset Measurement Flags:

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)

Table D - 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

Table E – Ground cover code (y) and soil depth code (z) for HXyz, HNyz, LXyz, LNyz, MNYZ and MXYZ

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

Z (soil depth):
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