NOAA Global Historical Climatology Network Daily (GHCN-D)

GHCN-Daily is a dataset that contains daily observations over global land areas. It contains station-based measurements from land-based stations worldwide, about two thirds of which are for precipitation measurements only (Menne et al., 2012). GHCN-Daily is a composite of climate records from numerous sources that were merged together and subjected to a common suite of quality assurance reviews (Durre et al., 2010). The archive includes the following meteorological elements:

- Daily maximum temperature
- Daily minimum temperature
- Temperature at the time of observation
- Precipitation (i.e., rain, melted snow)
- Snowfall
- Snow depth
- Other elements where available

In this archive, the period of record station files are parsed into yearly files that contain all available GHCN-Daily station data for that year plus a time of observation field (where available—primarily for U.S. Cooperative Observers). The observation times for U.S. Cooperative Observer data come from the station history archived in NCDC's Historical Observing Metadata Repository (HOMR). The files are updated daily on AWS to be in sync with updates to the GHCN-Daily dataset at NOAA.

This document refers to two other files, ghcnd-stations.txt and ghcnd-inventory.txt, which are also stored in the noaa-ghcn-pds S3 bucket. You can get these files here:

- http://noaa-ghcn-pds.s3.amazonaws.com/ghcnd-stations.txt: The ghcnd-stations file contains summary information for over 160000 stations used to create this dataset.
- http://noaa-ghcn-pds.s3.amazonaws.com/ghcnd-inventory.txt: The ghcnd-inventory file contains the periods of record for each station and element.

Accessing GHCN-D Data on AWS

The GHCH-D data are stored in the noaa-ghcn-pds bucket:

http://noaa-ghcn-pds.s3.amazonaws.com/

The directory is structured by year from 1763 to present, with each file named after the respective year. The data are available in CSV file format and as .csv.gzip files, so any particular year will be named yyyy.csv and yyyy.csv.gz. For example to access the gziped version of the data for 1788 append 1788.csv.gz to the bucket URL:

http://noaa-ghcn-pds.s3.amazonaws.com/csv.gz/1788.csv.gz

The uncompressed versions of the files can be accessed by using a slightly different URL and a filename ending with CSV. For example to access the uncompressed data for 1788 append 1788.csv to the bucket URL:

http://noaa-ghcn-pds.s3.amazonaws.com/csv/1788.csv

If you use the AWS Command Line Interface, you can access the bucket with this command:

```
aws s3 ls noaa-ghcn-pds
```

The data set is updated daily.

Summary of the Day Format

The yearly files are formatted so that every observation is represented by a single row with the following fields:

- ID = 11 character station identification code. Please see ghcnd-stations section below for an explantation
- YEAR/MONTH/DAY = 8 character date in YYYYMMDD format (e.g. 19860529 = May 29, 1986)
- ELEMENT = 4 character indicator of element type
- DATA VALUE = 5 character data value for ELEMENT
- M-FLAG = 1 character Measurement Flag
- Q-FLAG = 1 character Quality Flag
- S-FLAG = 1 character Source Flag
- OBS-TIME = 4-character time of observation in hour-minute format (i.e. 0700 =7:00 am)

The fields are comma delimited and each row represents one station-day.

ELEMENT Summary

The five core elements are:

- PRCP = Precipitation (tenths of mm)
- SNOW = Snowfall (mm)
- SNWD = Snow depth (mm)
- TMAX = Maximum temperature (tenths of degrees C)
- TMIN = Minimum temperature (tenths of degrees C)

Please see the **Full Explanation of Elements** section below for a full description.

M-FLAG

MFLAG is the measurement flag. There are ten possible values:

- 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)

Q-FLAG

Q-FLAG is the measurement quality flag. There are fourteen possible values:

- 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 mega consistency 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

S-FLAG

S-FLAG is the source flag for the observation. There are twenty nine possible values (including blank, upper and lower case letters):

- 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 SI-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 Hydro-meteorological 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

When data are available for the same time from more than one source, the highest priority source is chosen according to the following priority order (from highest to lowest): -
Z,R,0,6,C,X,W,K,7,F,B,M,r,E,z,u,b,s,a,G,Q,I,A,N,T,U,H,S

Full Explanation of the Elements Variable

As mentioned above the five core elements are:

- PRCP = Precipitation (tenths of mm)
- SNOW = Snowfall (mm)
- SNWD = Snow depth (mm)
- TMAX = Maximum temperature (tenths of degrees C)
- TMIN = Minimum temperature (tenths of degrees C)

The other elements are:

- ACMC = Average cloudiness midnight to midnight from 30-second ceilometer data (percent)
- ACMH = Average cloudiness midnight to midnight from manual observations (percent)
- ACSC = Average cloudiness sunrise to sunset from 30-second ceilometer data (percent)
- ACSH = Average cloudiness sunrise to sunset from manual observations (percent)
- AWDR = Average daily wind direction (degrees)
- AWND = Average daily wind speed (tenths of meters per second)
- DAEV = Number of days included in the multiday evaporation total (MDEV)
- DAPR = Number of days included in the multiday precipitation total (MDPR)
- DASF = Number of days included in the multiday snowfall total (MDSF)
- DATN = Number of days included in the multiday minimum temperature (MDTN)
- DATX = Number of days included in the multiday maximum temperature (MDTX)
- DAWM = Number of days included in the multiday wind movement (MDWM)
- DWPR = Number of days with non-zero precipitation included in multiday precipitation total (MDPR)
- EVAP = Evaporation of water from evaporation pan (tenths of mm)
- FMTM = Time of fastest mile or fastest 1-minute wind (hours and minutes,i.e., HHMM)
- FRGB = Base of frozen ground layer (cm)
- FRGT = Top of frozen ground layer (cm)
- FRTH = Thickness of frozen ground layer (cm)
- GAHT = Difference between river and gauge height (cm)
- MDEV = Multiday evaporation total (tenths of mm; use with DAEV)
- MDPR = Multiday precipitation total (tenths of mm; use with DAPR and DWPR, if available)
- MDSF = Multiday snowfall total
- MDTN = Multiday minimum temperature (tenths of degrees C; use with DATN)
- MDTX = Multiday maximum temperature (tenths of degrees C; use with DATX)
- MDWM = Multiday wind movement (km)
- MNPN = Daily minimum temperature of water in an evaporation pan (tenths of degrees C)
- MXPN = Daily maximum temperature of water in an evaporation pan (tenths of degrees C)
- PGTM = Peak gust time (hours and minutes, i.e., HHMM)
- PSUN = Daily percent of possible sunshine (percent)

- SN*# = Minimum soil temperature (tenths of degrees C) where:
    - * corresponds to a code for ground cover
    - 0 = unknown
    - 1 = grass
    - 2 = fallow

    - 3 = bare ground
    - 4 = brome grass
    - 5 = sod
    - 6 = straw mulch
    - 7 = grass muck
    - 8 = bare muck
    - # corresponds to a code for soil depth.
    - 1 = 5 cm
    - 2 = 10 cm
    - 3 = 20 cm
    - 4 = 50 cm
    - 5 = 100 cm
    - 6 = 150 cm
    - 7 = 180 cm
- SX*# = Maximum soil temperature (tenths of degrees C) where:
    - * corresponds to a code for ground cover (see above)
    - # corresponds to a code for soil depth (see above)
- TAVG = Average temperature (tenths of degrees C) [Note that TAVG from source 'S' corresponds to an average for the period ending at 2400 UTC rather than local midnight]
- THIC = Thickness of ice on water (tenths of mm)
- TOBS = Temperature at the time of observation (tenths of degrees C)
- TSUN = Daily total sunshine (minutes)
- WDF1 = Direction of fastest 1-minute wind (degrees)
- WDF2 = Direction of fastest 2-minute wind (degrees)
- WDF5 = Direction of fastest 5-second wind (degrees)
- WDFG = Direction of peak wind gust (degrees)
- WDFI = Direction of highest instantaneous wind (degrees)
- WDFM = Fastest mile wind direction (degrees)
- WDMV = 24-hour wind movement (km)
- WESD = Water equivalent of snow on the ground (tenths of mm)
- WESF = Water equivalent of snowfall (tenths of mm)
- WSF1 = Fastest 1-minute wind speed (tenths of meters per second)

- WSF2 = Fastest 2-minute wind speed (tenths of meters per second)
- WSF5 = Fastest 5-second wind speed (tenths of meters per second)
- WSFG = Peak gust wind speed (tenths of meters per second)
- WSFI = Highest instantaneous wind speed (tenths of meters per second)
- WSFM = Fastest mile wind speed (tenths of meters per second)
- WT** = Weather Type where ** has one of the following values:
    - 01 = Fog, ice fog, or freezing fog (may include heavy fog)
    - 02 = Heavy fog or heaving freezing fog (not always distinguished from fog)
    - 03 = Thunder
    - 04 = Ice pellets, sleet, snow pellets, or small hail
    - 05 = Hail (may include small hail)
    - 06 = Glaze or rime
    - 07 = Dust, volcanic ash, blowing dust, blowing sand, or blowing obstruction
    - 08 = Smoke or haze
    - 09 = Blowing or drifting snow
    - 10 = Tornado, waterspout, or funnel cloud
    - 11 = High or damaging winds
    - 12 = Blowing spray
    - 13 = Mist
    - 14 = Drizzle
    - 15 = Freezing drizzl
    - 16 = Rain (may include freezing rain, drizzle, and freezing drizzle)
    - 17 = Freezing rain
    - 18 = Snow, snow pellets, snow grains, or ice crystals
    - 19 = Unknown source of precipitation
    - 21 = Ground fog
    - 22 = Ice fog or freezing fog
- WV** = Weather in the Vicinity where ** has one of the following values:
    - 01 = Fog, ice fog, or freezing fog (may include heavy fog)
    - 03 = Thunder
    - 07 = Ash, dust, sand, or other blowing obstruction
    - 18 = Snow or ice crystals
    - 20 = Rain or snow shower

FORMAT OF “ghcnd-stations.txt” file

There are over 106200 stations listed in a seperate file. Found here:

http://noaa-ghcn-pds.s3.amazonaws.com/ghcnd-stations.txt

The table below describes the structure of each row of ghcnd-stations.txt

Variable	Columns	Type	Example
ID	1-11	Character	EI000003980
LATITUDE	13-20	Real	55.3717
LONGITUDE	22-30	Real	-7.3400

Variable	Columns	Type	Example
ELEVATION	32-37	Real	21.0
STATE	39-40	Character	
NAME	42-71	Character	MALIN HEAD
GSN FLAG	73-75	Character	GSN
HCN/CRN FLAG	77-79	Character	
WMO ID	81-85	Character	03980

These variables have the following definitions:

- ID = the station identification code.
  - The first two characters denote the FIPS country code
  - The third character is a network code that identifies the station numbering system used
  - 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, all numbers in the original CoCoRaHS IDs 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 GHCN-Daily
  - C = U.S. Cooperative Network identification number (last six characters of the GHCN-Daily ID)
  - E = Identification number used in the ECA&D non-blended dataset
  - M = World Meteorological Organization ID (last five characters of the GHCN-Daily 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-Daily ID)
  - The remaining eight characters contain the actual station ID.
- LATITUDE = latitude of the station (in decimal degrees).
- LONGITUDE = longitude of the station (in decimal degrees).
- STATE = U.S. postal code for the state (for U.S. and Canadian stations only).
- NAME = name of the station.

- GSN FLAG = flag that indicates whether the station is part of the GCOS Surface Network (GSN). The flag is assigned by cross-referencing the number in the WMOID field with the official list of GSN stations. There are two possible values:

  - Blank = non-GSN station or WMO Station number not available
  - GSN = GSN station

- HCN/CRN FLAG = flag that indicates whether the station is part of the U.S. Historical Climatology Network (HCN). There are three possible values:

  - Blank = Not a member of the U.S. Historical Climatology or U.S. Climate Reference Networks
  - HCN = U.S. Historical Climatology Network station
  - CRN = U.S. Climate Reference Network or U.S. Regional Climate Network Station

- WMO ID is the World Meteorological Organization (WMO) number for the station. If the station has no WMO number (or one has not yet been matched to this station), then the field is blank.

Lookup Table of Country Codes

The table of the country is derived from the ghcnd-countries.txt file available at the link below:

http://noaa-ghcn-pds.s3.amazonaws.com/ghcnd-countries.txt

The state codes are used in the station identification number. In the table below CODE is the FIPS country code of the country where the station is located.

Code	Country
AC	Antigua and Barbuda
AE	United Arab Emirates
AF	Afghanistan
AG	Algeria
AJ	Azerbaijan
AL	Albania
AM	Armenia
AO	Angola
AQ	American Samoa [United States]
AR	Argentina
AS	Australia
AU	Austria
AY	Antarctica
BA	Bahrain
BB	Barbados
BC	Botswana
BD	Bermuda [United Kingdom]
BE	Belgium
BF	Bahamas, The
BG	Bangladesh
BH	Belize
BK	Bosnia and Herzegovina
BL	Bolivia
BM	Burma
BN	Benin
BO	Belarus
BP	Solomon Islands
BR	Brazil
BU	Bulgaria
BX	Brunei
BY	Burundi
CA	Canada
CB	Cambodia
CD	Chad
CE	Sri Lanka
CF	Congo (Brazzaville)
CG	Congo (Kinshasa)
CH	China

Code	Country
CI	Chile
CJ	Cayman Islands [United Kingdom]
CK	Cocos (Keeling) Islands [Australia]
CM	Cameroon
CO	Colombia
CQ	Northern Mariana Islands [United States]
CS	Costa Rica
CT	Central African Republic
CU	Cuba
CV	Cape Verde
CW	Cook Islands [New Zealand]
CY	Cyprus
DA	Denmark
DO	Dominica
DR	Dominican Republic
EC	Ecuador
EG	Egypt
EI	Ireland
EK	Equatorial Guinea
EN	Estonia
ER	Eritrea
ES	El Salvador
ET	Ethiopia
EU	Europa Island [France]
EZ	Czech Republic
FG	French Guiana [France]
FI	Finland
FJ	Fiji
FK	Falkland Islands (Islas Malvinas) [United Kingdom]
FM	Federated States of Micronesia
FP	French Polynesia
FR	France
FS	French Southern and Antarctic Lands [France]
GA	Gambia, The
GB	Gabon
GG	Georgia
GH	Ghana
GI	Gibraltar [United Kingdom]
GL	Greenland [Denmark]
GM	Germany
GP	Guadeloupe [France]
GQ	Guam [United States]
GR	Greece

Code	Country
GT	Guatemala
GV	Guinea
GY	Guyana
HO	Honduras
HR	Croatia
HU	Hungary
IC	Iceland
ID	Indonesia
IN	India
IO	British Indian Ocean Territory [United Kingdom]
IR	Iran
IS	Israel
IT	Italy
IV	Cote D'Ivoire
IZ	Iraq
JA	Japan
JM	Jamaica
JN	Jan Mayen [Norway]
JO	Jordan
JQ	Johnston Atoll [United States]
JU	Juan De Nova Island [France]
KE	Kenya
KG	Kyrgzstan
KN	Korea, South
KR	Kiribati
S	Korea,South
K	Christmas Island [Australia]
KU	Kuwait
KZ	Kazakhstan
LA	Laos
LE	Lebanon
LG	Latvia
LH	Lithuania
LI	Liberia
LO	Slovakia
LQ	Palmyra Atoll [United States]
LT	Lesotho
LU	Luxembourg
LY	Libya
MA	Madagascar
MB	Martinique [France]
MC	Macau S.A.R
MD	Moldova

Code	Country
MF	Mayotte [France]
MG	Mongolia
MI	Malawi
MJ	Montenegro
MK	Macedonia
ML	Mali
MO	Morocco
MP	Mauritius
MQ	Midway Islands [United States]
MR	Mauritania
MT	Malta
MU	Oman
MV	Maldives
MX	Mexico
MY	Malaysia
MZ	Mozambique
NC	New Caledonia [France]
NE	Niue [New Zealand]
NF	Norfolk Island [Australia]
NG	Niger
NH	Vanuatu
NI	Nigeria
NL	Netherlands
NO	Norway
NP	Nepal
NS	Suriname
NT	Netherlands Antilles [Netherlands]
NU	Nicaragua
NZ	New Zealand
PA	Paraguay
PC	Pitcairn Islands [United Kingdom]
PE	Peru
PK	Pakistan
PL	Poland
PM	Panama
PO	Portugal
PP	Papua New Guinea
PS	Palau
PU	Guinea-Bissau
QA	Qatar
RE	Reunion [France]
RI	Serbia
RM	Marshall Islands

Code	Country
RO	Romania
RP	Philippines
RQ	Puerto Rico [United States]
RS	Russia
RW	Rwanda
SA	Saudi Arabia
SB	Saint Pierre and Miquelon [France]
SE	Seychelles
SF	South Africa
SG	Senegal
SH	Saint Helena [United Kingdom]
SI	Slovenia
SL	Sierra Leone
SN	Singapore
SP	Spain
ST	Saint Lucia
SU	Sudan
SV	Svalbard [Norway]
SW	Sweden
SX	South Georgia and the South Sandwich Islands [United Kingdom]
SY	Syria
SZ	Switzerland
TD	Trinidad and Tobago
TE	Tromelin Island [France]
TH	Thailand
TI	Tajikistan
TL	Tokelau [New Zealand]
TN	Tonga
TO	Togo
TS	Tunisia
TU	Turkey
TV	Tuvalu
TX	Turkmenistan
TZ	Tanzania
UG	Uganda
UK	United Kingdom
UP	Ukraine
US	United States
UV	Burkina Faso
UY	Uruguay
UZ	Uzbekistan
VE	Venezuela
VM	Vietnam

Code	Country
VQ	Virgin Islands [United States]
WA	Namibia
WF	Wallis and Futuna [France]
WI	Western Sahara
WQ	Wake Island [United States]
WZ	Swaziland
ZA	Zambia
ZI	Zimbabwe

Look Up Table of State Codes

The table of the state codes below is a derived from the ghcnd-states.txt file which is available at the link below

http://noaa-ghcn-pds.s3.amazonaws.com/ghcnd-states.txt

The state codes are used in the station identification number, the table below CODE = is the POSTAL code of the U.S. state/territory or Canadian province where the station is located.

Code	State
AB	ALBERTA
AB	ALBERTA
AK	ALASKA
AL	ALABAMA
AR	ARKANSAS
AS	AMERICAN SAMOA
AZ	ARIZONA
BC	BRITISH COLUMBIA
CA	CALIFORNIA
CO	COLORADO
CT	CONNECTICUT
DC	DISTRICT OF COLUMBIA
DE	DELAWARE
FL	FLORIDA
FM	MICRONESIA
GA	GEORGIA
GU	GUAM
HI	HAWAII
IA	IOWA
ID	IDAHO
IL	ILLINOIS
IN	INDIANA
KS	KANSAS
KY	KENTUCKY
LA	LOUISIANA
MA	MASSACHUSETTS

Code	State
MB	MANITOBA
MD	MARYLAND
ME	MAINE
MH	MARSHALL ISLANDS
MI	MICHIGAN
MN	MINNESOTA
MO	MISSOURI
MP	NORTHERN MARIANA ISLANDS
MS	MISSISSIPPI
MT	MONTANA
NB	NEW BRUNSWICK
NC	NORTH CAROLINA
ND	NORTH DAKOTA
NE	NEBRASKA
NH	NEW HAMPSHIRE
NJ	NEW JERSEY
NL	NEWFOUNDLAND AND LABRADOR
NM	NEW MEXICO
NS	NOVA SCOTIA
NT	NORTHWEST TERRITORIES
NU	NUNAVUT
NV	NEVADA
NY	NEW YORK
OH	OHIO
OK	OKLAHOMA
ON	ONTARIO
OR	OREGON
PA	PENNSYLVANIA
PE	PRINCE EDWARD ISLAND
PI	PACIFIC ISLANDS
PR	PUERTO RICO
PW	PALAU
QC	QUEBEC
RI	RHODE ISLAND
SC	SOUTH CAROLINA
SD	SOUTH DAKOTA
SK	SASKATCHEWAN
TN	TENNESSEE
TX	TEXAS
UM	U.S. MINOR OUTLYING ISLANDS
UT	UTAH
VA	VIRGINIA
VI	VIRGIN ISLANDS

Code	State
VT	VERMONT
WA	WASHINGTON
WI	WISCONSIN
WV	WEST VIRGINIA
WY	WYOMING
YT	YUKON TERRITORY

FORMAT OF “ghcnd-inventory.txt”

This is a file listing the periods of record for each station and element. The file is located here:

http://noaa-ghcn-pds.s3.amazonaws.com/ghcnd-inventory.txt

The file structure is described in the table below.

Variable	Columns	Type
ID	1-11	CHARACTER
LATITUDE	13-20	REAL
LONGITUDE	22-30	REAL
ELEMENT	32-35	CHARACTER
FIRSTYEAR	37-40	INTEGER
LASTYEAR	42-45	INTEGER

- ID = the station identification code. Please see “ghcnd-stations.txt” for a complete list of stations and their metadata.
- LATITUDE = the latitude of the station (in decimal degrees).
- LONGITUDE = the longitude of the station (in decimal degrees).
- ELEMENT = the element type. See section III for a definition of elements.
- FIRSTYEAR = the first year of unflagged data for the given element.
- LASTYEAR = the last year of unflagged data for the given element.

Contact

For questions regarding data content or quality, go here. For any questions regarding data delivery not associated with this platform or any general questions regarding the NOAA Big Data Project, email noaa.bdp@noaa.gov.

HOW TO CITE:

Note that the GHCN-Daily dataset itself has a DOI (Digital Object Identifier) so it may be relevant to cite both the methods/overview journal article as well as the specific version of the dataset used.

The journal article describing GHCN-Daily is:

Menne, M.J., I. Durre, R.S. Vose, B.E. Gleason, and T.G. Houston, 2012: An overview of the Global Historical Climatology Network-Daily Database. Journal of Atmospheric and Oceanic Technology, 29, 897-910, doi:10.1175/JTECH-D-11-00103.1

To acknowledge the specific version of the dataset used, please cite:

Menne, M.J., I. Durre, B. Korzeniewski, S. McNeal, K. Thomas, X. Yin, S. Anthony, R. Ray, R.S. Vose, B.E.Gleason, and T.G. Houston, 2012: Global Historical Climatology Network - Daily (GHCN-Daily), Version 3. [indicate subset used following decimal, e.g. Version 3.25]. NOAA National Centers for Environmental Information. http://doi.org/10.7289/V5D21VHZ [access date]

REFERENCES

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