

***NATIONAL WEATHER SERVICE INSTRUCTION 10-1003
AUGUST 25, 2017***

***Operations and Services
Climate Services, NWSPD 10-10
CLIMATE DATA SERVICES***

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SUMMARY OF REVISIONS: This directive supersedes NWSI 10-1003, “*Climate Data Services,*” dated November 15, 2012. Changes were made to reflect the NWS Headquarters reorganization effective April 1, 2015. The following revisions were made to this directive:

This instruction has been updated for the following:

1. Updated URLs for web pages
2. Changed all references for NCDC to NCEI
3. Changed the definition of LCD
4. Grammatical and clarification changes
5. Added Appendix C, Datzilla

Signed 8/11/2017
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1. Introduction. This instruction describes how Weather Forecast Offices (WFO) should respond to requests for climate data for surface in-situ sites. Data definitions are as follows:

1.1 Climate Data Sources. Climate data sources are sites that have undergone both NWS and the National Centers for Environmental Information (NCEI) (<http://www.ncei.noaa.gov>) data quality control (QC) and have some portion of their observations archived by NCEI. They include:

- a. Automated Surface Observing System (ASOS) (<http://www.nws.noaa.gov/asos>) observing sites
 - i. Local Climatological Data (LCD) sites (Definition):

NCEI provides Local Climatological Data (LCD) summaries for ASOS and other automated stations that include a daily account of temperature extremes, degree days, precipitation and winds (as available). While all these stations are subjected to automated quality control, a subset of stations, traditionally called LCD sites, receive a higher level of review based on analysis by a quality control expert. A list of these LCD sites is found in NWS Instruction 10-1004 (Climate Records) (<http://www.weather.gov/directives/sym/pd01010004curr.pdf>).
 - ii. Non-LCD sites (Definition):

All ASOS sites not included in paragraph 1.1.a.i above.
- b. NWS Cooperative Observer Program (COOP) (<http://www.weather.gov/os/coop>) observing sites (Definition):

NCEI published data sites whose data collection are supervised by the NWS and meet the definition of a COOP found in NWS Manual 10-1315 - Cooperative Station Observations (<http://www.weather.gov/directives/sym/pd01013015curr.pdf>).

Policy for data other than climate source data described above is covered in NWS Instructions 1-1201 - Obtaining Environmental Data from External Parties (<http://www.nws.noaa.gov/directives/sym/pd00112001curr.pdf>), which describes policy for the NWS process for the acquisition, use, and transmission of such data sets.

1.2. Climate Data Types. See NWS Instruction 10-1004 (Climate Records) for a list of climate data elements for each type.

- a. Observational data (hourly, daily and monthly).
- b. Long term means, extremes, and other statistics (including normals).

1.3 Climate Data Assurance Categories

- a. Preliminary – data before final NCEI QC.

- b. Final – Data that has been through final NCEI QC procedures. NCEI has several QC steps. Data is final only after the final QC step is completed and have been added to the NCEI archive.

Please note: Do not use the terms “Official” or “Unofficial” when referring to climate data assurance categories. It is perceived by users of the data that anything made public from the NWS is official.

1.4. Climate Data Status

- a. Certified (authenticated for legal use; e.g. litigation, etc.)
<https://www.ncdc.noaa.gov/customer-support/certification-data>: Certification is performed by NCEI. NCEI may certify final or preliminary data at their discretion. NCEI certification only attests that exact duplicates of climatic records on file at NCEI have been provided to those that request such data.
- b. Non-Certified (any data not authenticated by NCEI).

2. Public Availability of Climate Data from Weather Forecast Offices (WFO). WFOs may receive and respond to data requests from multiple sources (e.g. NWS Internet web sites (section 2.5), e-mail, facsimile, telephone, hard copy (by mail or user visit), etc.). Unless referral is warranted according to Section 3, WFO data availability is subject to the following conditions:

2.1 Preliminary versus Final Climate Data. WFOs will indicate their climate data are “preliminary” with the following disclaimer, which will be provided prominently with climate information supplied by direct contact from WFOs to users (i.e., at the top of any NWS web page; with hard copy, facsimile, or e-mail given to users; or stated orally on the telephone or in person to users):

“These data are preliminary and have not undergone final QC by NCEI. Therefore, these data are subject to revision. Final and certified climate data can be accessed at the National Centers for Environmental Information (NCEI) - <http://www.ncei.noaa.gov>.”

2.2 NCEI Publications. WFOs will **not** provide NCEI data publications or products for which NCEI charges a fee for cost recovery. WFOs will refer inquiries for these publications to NCEI. NCEI indicates which publications/products are free and which have a charge at the following web page: <https://www.ncdc.noaa.gov/data-access/quick-links>

2.3 Astronomical Data. WFOs will indicate, when appropriate, that astronomical data are computed by The U.S. Naval Observatory (USNO) with the following disclaimer, which will be provided prominently where this information is provided by direct contact from WFOs to users (i.e., on any NWS web page providing the information; with hard copy, facsimile, or e-mail given to users; or stated orally on the telephone or in person to users):

“The U.S. Naval Observatory (USNO) computes astronomical data. Therefore, the NWS does not record, certify, or authenticate astronomical data. Computed times of sunrise, sunset, moonrise, moonset; and twilight, moon phases and other astronomical data are available from USNO's Astronomical Applications Department

(<http://www.usno.navy.mil/USNO/astronomical-applications>). See <http://aa.usno.navy.mil/faq/docs/lawyers.php> for information on using these data for legal purposes.”

2.4 Database Use. The Regional Climate Centers’ (RCCs) (<http://www.ncdc.noaa.gov/customer-support/partnerships/regional-climate-centers>) Applied Climate Information System (ACIS) (<http://www.rcc-acis.org>) (see Appendix A) provides data to the NWS through an interface, called xmACIS2, to satisfy NWS needs for supplying climate information to the public. WFOs are encouraged to use xmACIS2 in lieu of datasets from other systems when responding to data user requests. The xmACIS2 is automatically updated and synchronized between NCEI and the RCCs with the most recent data available (including near real-time preliminary data and archived final data). Therefore, xmACIS2 includes the most complete and up-to-date data available to all of NOAA and its data delivery partners. The xmACIS2 is nationally maintained and has replaced locally developed, uncoordinated, and inconsistent datasets.

Use of datasets from other systems perpetuates the inconsistencies of the past. WFOs are required to work with NCEI and the RCCs to ensure the xmACIS2 database is the best, most up-to-date, consistent dataset available. The WFO should correct historical data errors found in xmACIS2 through Datzilla (<http://datzilla.srcc.lsu.edu/datzilla>) submissions. More information on Datzilla can be seen in Appendix C of this document.

2.5 Internet Climate Data Provision (<http://www.weather.gov/climate>). WFOs will provide data by using the standard NWS climate web page formats:

2.5.1 NWS Climate Home Page. Users may access any WFO's climate web pages using links on the map at the NWS National Climate Home Page (Figure 1), or alternatively at any selected WFO's home page by clicking on the "Climate and Past Weather" link above the forecast map.

The screenshot displays the National Weather Service's National Climate Home Page. At the top, the NOAA logo and the text "National Oceanic and Atmospheric Administration's National Weather Service" are visible. A search bar and navigation links for "Site Map", "News", "Organization", "NWS", and "All NOAA" are present. A left-hand navigation menu lists various services such as "Local forecast by City, St", "Sign-up for Email Alerts", "Warnings", "Observations", "Forecasts", "Text Bulletins", "Forecast Models", "Climate", "Weather Safety", and "Education/Outreach". The main content area features a "Climate Services" banner with a link to the "Climate Services Web Page" and a "Click on the map below to obtain local climate information." instruction. Below this is a "Select Recent Observations" dropdown menu and a "Select Climate Outlook" dropdown menu. The central focus is a map of the United States titled "Highest and Lowest Temperature for the 24 Hours ending at 7 AM EST Sat Jul 21 2012". The map shows numerous data points across the country, with values ranging from 37 to 108. Below the map, it is noted that the data is "Prepared by NOAA National Centers for Environmental Prediction, Hydrometeorological Prediction Center" and includes "Text Only Temperatures" for American Samoa, Guam, and Puerto Rico. A disclaimer at the bottom states: "Please note this information is preliminary and subject to revision. Official and certified climatic data can be accessed at the National Climatic Data Center (NCDC) (http://www.ncdc.noaa.gov/oa/ncdc.html)." The NOAA logo is also present in the top right corner.

Figure 1: NWS National Climate Home Page (<http://www.weather.gov/climate>)

2.5.2 WFO Climate Web Page. Figure 2 shows an example of a nationally standardized WFO climate web page. Data will be contained under the following tabs: “Observed Weather” (Figure 2 showing the selection of the “Observed Weather” tab), “NOWdata” (Figure 3), and Local Data/Records. The Astronomical Data tab will link to the USNO. The other tabs provide general information or climate predictions.



Figure 2. Example of a WFO Climate Web Page with the “Observed Weather” tab selected. This tab provides ASOS preliminary data.

As a minimum, WFOs will post under the “Observed Weather” tab the top four products listed (CLI, CF6, RER, CLM - under the column labeled “Product”) for all ASOS LCD locations in their area of responsibility. In addition to these, the CLS, CLQ and CLA products will also be listed if these products are produced by the WFO. See NWS Instruction 10-1004 (Climate Records) for details on these products. WFOs may add additional locations for these products. The Regional Climate Services Program Managers (CSPMs), through consensus, will determine the amount of archiving for any product. WFOs may also post any other information under “Local/Data Records.” Changes to the “Observed Weather” and “Local Data/Records” tabs are made through the NWS Climate Configuration Management System (CMS) located at <https://nwscms.weather.gov/nwscms>. Accounts on the CMS are managed by the Regional CSPM (or designee) and the NWSHQ Climate Services Branch.

The screenshot shows the NOAA National Weather Service Forecast Office website for Baltimore/Washington. The main navigation bar includes 'Home', 'News', 'Organization', and a search field. Below this is a secondary navigation bar with tabs for 'Observed Weather', 'Climate Locations', 'Climate Prediction', 'Climate Resources', 'Local Data/Records', 'Astronomical', and 'NOWData'. The 'NOWData' tab is selected, displaying the 'NOWData - NOAA Online Weather Data' interface. This interface has five columns: '1. Product', '2. Location', '3. Variable', '4. Year', and '5. View'. Under '1. Product', 'Monthly avgs/totals' is selected. Under '2. Location', 'Baltimore Area' is selected in a dropdown menu. Under '3. Variable', 'Max Temperature' is selected. Under '4. Year', 'Current year' is selected. A 'Go' button is visible in the '5. View' column. Below the selection area is a 'Product Description' box containing text about monthly averages/totals. To the right of the description are links for 'NCDC Map Services', 'Common questions', and 'Submit a question/comment'. At the bottom right is the 'Powered by ACIS' logo. A footer note states: 'The Applied Climate Information System (ACIS) is a joint project of the Regional Climate Centers, the National Climatic Data Center and the National Weather Service. Official data and data for additional locations and years are available from the Regional Climate Centers and the National Climatic Data Center.'

Figure 3: Example of a WFO Web Page with the “NOWdata” tab selected. This tab provides ASOS preliminary data and COOP preliminary data.

WFOs select the locations for the NOWData (see Appendix B) products. The amount of archiving for any NOWData product is determined by consensus of the CSPMs in coordination with the RCCs, who provide NOWData through ACIS. WFOs are encouraged to include all COOPs that have 30-year climate averages computed and/or are sending data daily via phone or the web.

3. Referral of Requests

a. WFOs will refer data requests to NCEI for the following situations:

- Any request requiring certification of data.
- Any request related to a requirement to fulfill a law, mandate, or ordinance for a federal, state, or local government.

- Any requirement for data to be used in litigation. The WFO will notify NOAA General Counsel (<http://www.gc.noaa.gov/atmo-office.html>) if the observer or any NWS employee is subpoenaed and the Forensic Services Meteorologist (NWS/COO/W/COO11, 301-427-9300) for proceedings arising from transportation accidents.
- Any request for copies of original (“raw”) observation forms.
- Any international climate requests.

These requests will be made in accordance with the following instructions:

- 10-2003 (Records Retention)
(<http://www.nws.noaa.gov/directives/sym/pd01020003curr.pdf>)
- 10-2004 (Accident Notification and Response)
(<http://www.nws.noaa.gov/directives/sym/pd01020004curr.pdf>)
- 10-2005 (Handling and Releasing Accident-Related Weather Information)
(<http://www.nws.noaa.gov/directives/sym/pd01020005curr.pdf>)
- 10-2006 (The Accident Investigation/Litigation Process)
(<http://www.nws.noaa.gov/directives/sym/pd01020006curr.pdf>)

b. For requests other than item “a,” WFOs should refer requests for the following situations to NCEI, RCC, State Climatologists, or the NWS web link listing commercial weather vendors serving the U.S.(*) (<http://www.weather.gov/im/dirintro.htm>), as appropriate:

- The request requires data in a format different from what is available to the WFO.
- The request requires a WFO to expend more time and effort than is available to answer.
- The data requested requires a response outside the scope of a WFO’s expertise.
- The data needed are historical or documentary in nature and preliminary WFO data is insufficient.

c. WFOs will explain the data is considered preliminary and describe the process for requesting certified copies from NCEI.

(*) WFO will **not** recommend a specific commercial vendor to a user.

In many cases, NCEI or the RCCs may be best able to handle larger scale analysis at the state, regional, or national levels (e.g. for drought or other widespread trends).

NCEI’s Climate Monitoring website is a good resource for state, regional and national analyses (<https://www.ncdc.noaa.gov/climate-monitoring/>).

Appendix A – xmACIS2 (Applied Climate Information System, Version 2)

xmACIS2 is a web-based interface that provides interactive access to climatological summary products. The products are based on data from the Regional Climate Centers' constantly-updated climate database, Applied Climate Information System (ACIS). To access the system use the address: <http://xmacis.rcc-acis.org/>.

The custom station lists in xmACIS2 can be modified upon request. Stations can be added to or removed from the station lists. Requests for changes should be sent to the regional CSPM and are usually incorporated into xmACIS2 near the beginning of each month. Note that stations with no data in the ACIS database will not appear on the xmACIS2 web page. Only stations that provide daily summary data will be available through xmACIS2.

The xmACIS2 web page consists of two frames. The frame on the left is used to select program options. When the "Submit" button is selected, the results appear in the right frame. A more complete "xmACIS User's Guide" is available in PDF format at http://xmacis.rcc-acis.org/static/xmACIS_Users_Guide.pdf.

Questions regarding ACIS data availability should be routed through the regional CSPM. The regions can filter these requests and work with the appropriate RCC for resolution. Data that have been key-entered at local offices can be added to the xmACIS2 database by submitting a ticket through Datzilla so the data can become part of the official archive at NCEI. Ideas for future enhancements to the xmACIS2 suite of products should also be routed through the CSPM.

Questions regarding xmACIS2 capabilities and problem reports can be sent to xmacis@nrcc.cornell.edu.

xmACIS2 is for National Weather Service internal use only. The URLs should **not** be given out to anyone outside of NWS. The RCCs have developed NOWData for general public access to the ACIS database.

Appendix B - NOWData (NOAA's Online Weather Data)

What is NOWData?

NOAA's Online Weather Data (NOWData) is a data query system providing basic climate statistics to the public, using the NOAA RCC Applied Climate Information System (ACIS). Through NOWData, climate statistics are available, on a preliminary basis, for surface observing stations from across the conterminous U.S., Alaska, Hawaii, Puerto Rico, the Virgin Islands, and Guam. Daily and monthly data for temperature, precipitation, snowfall, and heating/cooling/growing degree days are available for the current and previous years. Climate normals are available for the current 30-year normals period and extreme values are available for the full period of record for each station. Data from the 19th Century to yesterday can be found in NOWData.

How to access NOWData?

Click the area of interest on the map at <http://www.weather.gov/climate/> to access a local NWS WFO climate page, and then select the NOWData tab at the upper right.

NOWData may also be accessed directly from any local NWS WFO homepage by selecting "Local" under Climate from the list on the left and then the NOWData tab at the upper right of the local climate page.

At the NOWData interface, select a location and one of the available products. Then make additional selections from any menus that appear and select "Go." The product will be displayed in a separate screen.

Why NOWData?

The most common question asked of NWS personnel is "What was the weather like on...?" NOWData provides that answer and much more:

- Unprecedented, user-friendly access to climate information for the general public.
- Convenient "one-stop" tool for everyone.
- Supports NOAA's commitment to provide climate data to the public.

Who is responsible for NOWData?

NOWData was developed by NOAA as a joint project between NWS, NCEI and the RCCs.

Where to get additional information?

NOWData information is considered preliminary and subject to revision. Final and certified climatic data can be accessed at NCEI (<http://www.ncdc.noaa.gov/>). NOWData is designed to provide statistical climate information. Users interested in lengthy data histories for a station should contact NCEI or the RCCs.

Appendix C – Datzilla

Datzilla is a web-based (<https://datzilla.srcc.lsu.edu/datzilla>) system used to report and track errors in NOAA datasets and data products and is an important part of ensuring their accuracy and fidelity. Datzilla was developed more than ten years ago at the Southern Regional Climate Center as a derivative modification of the open-source Bugzilla software bug reporting system. It was modified to account for differences in the reporting of software development errors and the type of errors reported against NOAA data systems. The system has more than 950 enrolled users, primarily consisting of NWS Forecast Office personnel, State Climatologists, and Regional Climate Center staff. More than 6500 tickets have been entered against NOAA data systems consisting of tens of thousands of data corrections and additions to existing datasets.

Users gain access to the Datzilla system by requesting an account at the Datzilla Website (<https://datzilla.srcc.lsu.edu/datzilla>) and clicking the "Request a Datzilla Account" link. Once access is granted, a user can report a suspected error in NOAA datasets or products by selecting the option to enter a new error report at the Datzilla home page. Fields are available for selecting the appropriate Source system (e.g., 10. xmACIS/SC-ACIS, 21. NCEI In-Situ (Surface Data), 40. NCEI In Situ Station History) and for describing the error found. This should include the data/product affected, the problem area, and a summary describing the error. Each ticket is reviewed by the Datzilla gatekeeper at NCEI and is typically followed up through e-mail and phone communication if additional information is required. Notification regarding the resolution of each submitted ticket is provided.

For more information on Datzilla, see the overview at <https://datzilla.srcc.lsu.edu/datzilla/documents/DatzillaOverview.html>.