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What is xmACIS

xmACIS is a data-query tool providing quick access to climatological summary products for National Weather Service (NWS) field offices. It links directly to the Applied Climate Information System (ACIS), the Regional Climate Center (RCC) database that ties archived data to near-real-time data. xmACIS consists of various software routines designed to provide responses to climate information inquiries commonly received by NWS offices. More unusual requests, such as certification of data, and requests for complex product or serial data, should be referred to the respective RCC, State Climatologist, or NCDC. Access to xmACIS is restricted to NWS field offices and select climate community partners.   Another data-query tool, NOWData, is available to the public for basic self-service climate information queries.

Why xmACIS?
The general need for a climate data query tool on-station at NWS offices has long been recognized. With the establishment of NWS climate services, xmACIS was developed to support NWS field personnel in their role as climate service providers.

Where can xmACIS be accessed?
The xmACIS web site is located at:
http://xmacis.rcc-acis.org/

Local area pages can be accessed directly by adding a 3-letter identifier to the URL. (For example, http://xmacis.rcc-acis.org/ict for Wichita.)

How to use xmACIS?
Upon entering the xmACIS web site, select "Area of Interest" from the pull-down menu. (To bypass this step and go directly to a local area page, see the directions in the section above.) Next, select a routine, after which you will be prompted to select and/or enter the required inputs. The thirteen routines and a list of inputs are described below. After the required input information is submitted, the data output product appears.

Data:
All ACIS products use the best data available. The ACIS database undergoes constant revision and contains data ranging in quality from provisional to NCDC final. Timeliness of data depends on a station's reporting practices. Many stations report through ACIS and are updated in xmACIS on a daily basis, offering up-to-date, albeit preliminary, climate information.

Data are presented in English units – i.e. degrees Fahrenheit and inches.

All degree days (HDD, CDD and GDD) are computed by first calculating the average temperature for the day, rounding it up from zero and then computing the difference between that value and the base temperature.

Routines:
Monthly Averages/Totals - Monthly averages are computed for the temperature variables and snow depth. Monthly totals are computed for precipitation, snowfall and the degree day variables. Monthly statistics are based on all non-missing data available for the month. If all days in a month are missing, a dash (-) is displayed. An annual summary for each year is also provided. Monthly averages over the specified range of years are computed, along with an annual average that is the average or sum of these monthly values. For snowfall, snow depth and heating degree days, the months on the chart run from July through June. For all other variables, the year runs from January through December.

Monthly Frequencies - number of days in a month that a given threshold value is exceeded. An example is the number of days/month greater than or equal to 90 degrees. Monthly statistics are based on all non-missing data available for the month. If all days in a month are missing, a dash (-) is displayed. An annual count for each year is also provided. Monthly averages over the specified range of years are computed, along with an annual average that is the sum of these monthly values. For snowfall, snow depth and heating

degree days, the annual values are accumulated from July through June. For all other variables, the year runs from January through December.

Monthly Extremes - highest or lowest daily values (as selected by the user) recorded in a month. Monthly statistics are based on all non-missing data available for the month. If all days in a month are missing, a dash (-) is displayed. The extreme value (highest or lowest) for each month over the specified range of years is also provided. For snowfall, snow depth and heating degree days, the months on the chart run from July through June. For all other variables, the year runs from January through December.

Calendar Day Averages - straight average of all occurrences of the specified variable for the day in question over the specified range of years. A leap day (February 29) value will be computed, if there is at least one leap year in the range of years. A note at the bottom of the output reports the number of non-missing years available for analysis (exclusive of leap days).

Calendar Day Frequencies - number of times over a range of years that a given threshold value is exceeded on each day. A leap day (February 29) value will be computed, if there is at least one leap year in the range of years. A note at the bottom of the output reports the number of non-missing years available for analysis (exclusive of leap days).

Calendar Day Extremes - highest or lowest daily values (as selected by the user) recorded on each day over a range of years. A leap day (February 29) value will be computed, if there is at least one leap year in the range of years. A note at the bottom of the output reports the number of non-missing years available for analysis (exclusive of leap days).

Daily/Monthly Normals - official normals from the National Climatic Data Center for the 1971-2000 period. Normals are not available for every station. Snowfall normals, in particular, are only available for first-order stations. Monthly normals are calculated independently of the daily normals, so monthly totals/averages might not exactly match the sum/average of the daily values.

Extremes - All periods, of designated length in days, are examined between the beginning and ending dates specified. For temperatures and snow depth, the daily values are averaged; for all other variables, they are totaled. The most extreme highest or lowest results are displayed. The length of the list that is displayed is specified by the "number of records" selection. The rank that is assigned to a group of tied values is the lowest rank. The "ending date" that is listed is the ending day of each accumulation period.

Consecutive Days - The selected variable is analyzed for strings of consecutive days meeting the selection criterion (comparison and threshold). Missing values will end a run. The longest such runs of days are reported. The length of the list that is displayed is specified by the "number of records" selection. The rank that is assigned to a group of tied values is the lowest rank. The "end date" that is listed is the last day of the run.

First/Last Dates - Dates of first and last occurrence of a given event are calculated for each year. The season start date for minimum temperature, snowfall, snow depth and HDD is August 1. That is, the program begins looking for the first occurrence of the search criterion (comparison and threshold) on August 1 and looks forward through time until it finds an occurrence. It begins looking for the last occurrence beginning on July 31 and works backward through time. For the other variables, the program works in a similar way, except the season start date is January 1. Therefore, it starts looking for the first date beginning January 1 and looks for the last date beginning December 31 and works backward. When searching for occurrence dates, the program looks forward (or backward) up to 12 months. If 18 or more days of missing data are encountered or 12 months are searched before an occurrence is found, the occurrence date for that year is set to missing (-). The "Length" column gives the number of days between (but not including) the date in the second column and the date in the third column.

Daily data for a month - For each day of the month, the maximum temperature, minimum temperature, average temperature, HDD, CDD, precipitation, snowfall and depth of snow on the ground are displayed. An "M" indicates missing data and a "T" indicates a trace (of precipitation, snowfall or snow on the ground). The summary line at the bottom of the chart provides the temperature averages, degree day totals, precipitation and snowfall totals and average depth of snow on the ground. A message is given if no data for the selected month exists for the station in the ACIS database.

Almanac Data for a Day - The maximum temperature, minimum temperature, average temperature, HDD, CDD, precipitation, snowfall and depth of snow on the ground are displayed for the specified day in the "Observed" column. Also displayed are the 1971-2000 normal values for the day, the record values for the day and their year of occurrence, and the observed values for the previous year. An "M" indicates missing data and a "T" indicates a trace (of precipitation, snowfall or snow on the ground). This same information is also provided for the month-to-date (i.e. first day of the month through date of interest). "Records" are the highest values on record, except for minimum temperature, which is the lowest on record. A plus sign (+) indicates that the record listed occurred in more than one year. In such cases, the last year of occurrence is listed.

Daily Data Listing - For each day in the range of dates, the daily maximum temperature, minimum temperature, precipitation, snowfall and depth of snow on the ground are listed. There is one record (row of data) per day. When the file has been prepared, a link will be displayed in the output frame of the browser. Clicking on this link will display the file. Some browsers allow users to right-click and hold down the mouse button over the link to download the file directly.

Inputs:

Station – any station in the drop-down menu. The station lists were selected by each NWS office and were later updated to include all NCDC normals

stations. Stations with NCDC normals have an asterisk (*) following the station name. ThreadEx stations appear at the top of each stations list and have the word "Area" in the station name (e.g. Boston Area).

Variable – for most routines, the available variables are maximum temperature, minimum temperature, precipitation, snowfall, snow depth, heating degree days (base 65), cooling degree days (base 65), and growing degree days (base 50).

Start year – the desired 4-digit starting year for the analysis. If a starting year before the beginning of a station's record is requested, most routines will set the starting year to the beginning of record.

End year – the desired 4-digit ending year for the analysis. If an ending year after the station's final year of record is requested, most routines will set the ending year to the last year of record.

Begin date – the desired starting month and day.

End date – the desired ending month and day.

Length of period – the number of days that will be accumulated (averaged or summed) for evaluation.

Number of records – the minimum number of records to be listed in the program output.

Comparison – type of comparison to be done: greater than, greater than or equal to, less than, or less than or equal to.

Threshold – value against which the daily values are compared. There is no provision to use "trace" as a precipitation threshold.

High/Low – two choices ("highest values" and "lowest values") are given. "Highest values" means the warmest or wettest extremes will be displayed. "Lowest values" will give the coldest or driest extremes.

Who is responsible for xmACIS?

xmACIS was developed and is maintained by NOAA's Northeast Regional Climate Center, Dr. Art DeGeatano, Director. The system is based on the data query concept called xmClimate, developed by NWS WFO Juneau, AK.

Where to find more information:

The xmACIS User's Guide may be accessed from a link on the web site's "Help" page or directly at: **http://xmacis.nrcc.cornell. edu/static/xmACIS_Users_Guide.pdf**

If you have questions, contact Tim Owen at NCDC (Tim.Owen@noaa.gov) or Keith Eggleston at NRCC (KLE1@cornell.edu).