



New England Climate Portal Tutorial

The New England Climate Portal is a web based application that allows users to ask questions about recent and historical climate within the 6 New England states. Users specify the type of information they would like to see by choosing options from drop down menus. The Portal converts these selections to an SQL query and retrieves the subset of data from the database. Data is from the NOAA National Climatic Data Center.

The station list has information about location, time period of record and which of the 5 primary measurements (see step one) are present at that station.

Step 1. Choose the parameter of interest.

Climate data is or has been collected daily at over 600 stations within the region. The five most commonly collected measurements are:

- Daily precipitation
- Minimum Temperature
- Maximum Temperature
- Snowfall
- Snow Depth

Other climatic parameters are measured at fewer locations but are included in the list of options.

Step 2. Choose a query

There are currently three different types of queries available.

Option 1 : Aggregate data using specific criteria. The user defines the spatial and temporal extent of the query in addition to the type of statistical output and grouping desired. Results are returned as means or sums of the measured value.

Option 2. Determine how often a specific event occurred. This option allows users to look at the number of occurrences of e.g. days over 100 degrees. The results are returned as a tally, not the actual value.

Option 3. Time series data or graph. This option allows users to look at trends over time. Users can select a State or an individual station; results are returned in a line-graph format or a table of values.

Once a query type has been determined, additional selection boxes appear allowing the user to input information specific to the type of query chosen.

Step 3. Select Time Span

Some records in the database date back to the 1890s. Check the [Station List](#) at the top of the query page for information on each station location, time period of record and which of the five primary parameters were measured. Users interested in long time periods of record should browse the station list and determine which stations have data meeting their needs.

Please note that records VARY GREATLY from station to station. Many locations may have 3 or 4 different station names where data were collected discontinuously across time. For more information on Stations, collections and data records, we suggest that you check the [NCDC website](#)

Due to the length of the historical record, you must use a four digit year to input date ranges. Format: MM/DD/YYYY. If you do not select a date range, the query will default to 1/1/2006 - 12/31/2006. CAUTION: Be careful to select a time span that meets your grouping criteria. e.g If you are interested in monthly values, do not enter a date range that includes a partial month.

Choices for the first three steps are the same for all three query types but change after selection of time span. Tutorials for each Query Option are separated below.

Query Option 1, Step 4 – 8.

Step 4. (Option 1). Limit time span

Seasons. Data can be compiled by seasons. Current divisions are:

- Winter: Jan Feb Mar
- Spring: Apr May Jun
- Summer: Jul Aug Sep
- Fall: Oct Nov Dec

Months. Data can be compiled by month by selecting one or more months from the drop down menu. To select more than one month, hold down the control key.

Choosing either of these options will exclude unselected months or seasons from the calculation and all values will be used to determine a single result. To obtain results for multiple individual months or seasons, you must perform separate queries for each desired timespan.

Step 5. (Option 1). Limit geographic extent

Choosing this option allows the query to run on a smaller subset of data. For example, if counties were chosen as the Geographic Unit (Step 6), the portal would return results for all counties in all six New England states. Selecting only the state of Maine under Option 5 limits the calculation to values for counties in Maine only. This is useful when querying stations with long periods of record and large datasets.

Step 6. (Option 1). Group results by geographic unit

Results will be returned for individual stations within the Geographic extent chosen in Step 5. This is the default option. Users can choose to get results averaged (all parameters) or summed (snowfall/precip only) for a larger unit area. Choices include:

- Counties
- States
- Stations
- Towns

HUC 8 and HUC 12 Watershed delineations will be added to these options in the near future.

Step 7. (Option 1). Select calculation.

Once time period and spatial extent are selected, the user decides which calculation will be performed on the data. Choices include:

- Mean. Does not include any weighting for missing values.
- Maximum. Single maximum value of all records selected.
- Minimum. Single minimum value of all records selected.
- Standard Deviation. Does not include any weighting for missing values.
- Sum. Sums all selected values within user selected time and geographic constraints. Sums of data are only allowed for precipitation and snowfall.

To view a table of daily values for a specific station, choose Option 3, Time series data or graph.

Step 8. (Option 1). Select result output format.

Query results can be returned in three ways. Options include:

Table: Results are displayed in an html table which opens in a new window. This is recommended as the best way to view results while refining the query settings.

CSV file: Results are saved to a comma separated values text file for import into other applications

Map: Results are displayed in a mapserver window on a map of New England. More information on working with maps is available on the map display page.

Query Option 2, Step 4 – 9.

Step 4. (Option 2). Limit time span

Seasons. Data can be compiled by seasons. Current divisions are:

- Winter: Jan Feb Mar
- Spring: Apr May Jun
- Summer: Jul Aug Sep
- Fall: Oct Nov Dec

Months. Data can be compiled by month by selecting one or more months from the drop down menu. To select more than one month, hold down the control key.

Choosing either of these options will exclude unselected months or seasons from the calculation and all values will be used to determine a single result. To obtain results for multiple individual months or seasons, you must perform separate queries for each desired timespan.

Step 5. (Option 2). Limit geographic extent

Choosing this option allows the query to run on a smaller subset of data. For example, if counties were chosen as the Geographic Unit (Step 6), the portal would return results for all counties in all six New England states. Selecting only the state of Maine under Option 5 limits the calculation to values for counties in Maine only. This is useful when querying stations with long periods of record and large datasets.

Step 6. (Option 2). Group results by geographic unit

Results will be returned for individual stations within the Geographic extent chosen in Step 5. This is the default option. Users can choose to get results averaged (all parameters) or summed (snowfall/precip only) for a larger unit area. Choices include:

- Counties
- States
- Stations
- Towns

HUC 8 and HUC 12 Watershed delineations will be added to these options in the near future.

Step 7. (Option 2). Group results by time.

When searching for the frequency of occurrence of specific conditions or events, this option allows you to average or total within a greater time unit than just a day. Options include:

- Day
- Month
- Quarter
- Year
- Decade

Example:

How many times was the maximum temperature over 100 degrees for the years 2005 and 2006? Grouping by Month returns a tally with a maximum value of 24 and a minimum value of 0; grouping by year returns a tally with a maximum value of 2 and a minimum value of 0.

Currently the tally is determined by averaging all maximum temperature values within the time span and time group then creating a tally of the number of times the specific conditions have been met. **THIS QUERY DOES NOT GIVE YOU ACTUAL PARAMETER VALUES.** In order to see actual values, you must use a different Query Option.

Step 8. (Option 2). Choose conditions for event

Three conditional inputs are needed to run the query:

Box 1: Select the computation for compiling the data. Choices are Mean (all parameters) or Sum (precipitation/snowfall only).

Box 2: Choose the qualifying statement. Options include:

- equal to
- not equal to
- greater than
- less than
- greater than or equal to
- less than or equal to

Box 3: Select the limiting value. This is the value that the query will calculate and look for results which meet the specified conditions.

This query returns a tally of the number of times the specified condition is met within the time span and geographic grouping specifications set by the user. **THIS QUERY DOES NOT GIVE YOU ACTUAL PARAMETER VALUES.** In order to see actual values, you must use a different Query Option.

Step 9. (Option 2). Select result output format.

Query results can be returned in three ways. Options include:

Table: Results are displayed in an html table which opens in a new window. This is recommended as the best way to view results while refining the query settings.

CSV file: Results are saved to a comma separated values text file for import into other applications

Map: Results are displayed in a mapserver window on a map of New England. More information on working with maps is available on the map display page.

Query Option 3, Step 4 – 6.

Step 4. (Option 3). Select states and/or stations.

The time series query option allows the user to view records from one or multiple stations. In addition, users may select a State, which returns the mean of all values across stations within the state by time group (Step 5). Including whole state calculations allows for comparison of individual station results with the state average.

To select multiple states or stations:

PC: hold down the control key and click (left mouse) on the additional states or stations.

Macs: hold down the Apple key and click the additional states or stations.

Step 5. (Option 3). Group results by time unit.

Time series results will be returned as daily values unless a larger time unit is selected. If a time unit other than day is chosen, the query result will be an un-weighted average of all the values within that time unit. Options include:

- Day
- Month

- Quarter
- Year
- Decade

The time unit is that which will be displayed on the x-axis of the time series graph. Values for an individual station are averaged when a time unit larger than day is selected. Choosing a state will return an un-weighted average for all station data in the state within the time unit selected.

Step 6. (Option 3). Select result output format

Time Series results can be returned in three ways. Options include:

Table: Results are displayed in an html table which opens in a new window. This is recommended as the best way to view results while refining the query settings.

CSV file: Results are saved to a comma separated values text file for import into other applications

Graph: Results are displayed on a line graph. The graph can be saved as a .jpg by clicking on the image in the browser window.

Viewing Results

Working with the Maps

The mapping page uses mapserver to display data . The interface includes the following features and tabs.

a. Map display window.

Within the display window, users are able to zoom and pan by clicking the controls on the left side of the window. Selecting the + sign in the upper right corner produces a drop down menu where the user can change the base layer and portal layers for display.

b. Information Tabs

Legend – Displays a legend for the range of values displays on the current map.

Layers – Allows user to view 30-year corrected climate normals for 1970 – 1999.

Data – Clicking on a map feature displays data about that point or polygon such as lat long coordinates. Map controls must be set on Pan for this feature to work.