

Enhanced Daily Climate

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1. What is the Enhanced Daily Climate?

The goal of the Enhanced Daily Climate (EDC) is to provide more descriptive statistics than the Normal high and low for a given location. Often, Normals from the National Climatic Data Center (NCDC) are given as reference points for expected temperatures on a given day. However, the method in which the NCDC Normals are computed involves heavy smoothing and provides only a single point for the normal temperature, rather than a range.

A distribution chart of January 1st maximum temperatures for Little Rock, AR is displayed in figure 1. As indicated by the chart, the maximum temperature can vary greatly, with the absolute range for this station and day nearly 60 degrees F. While the EDC Average of 48 degrees (yellow/green bar) is no more descriptive than the NCDC Normal of 43 degrees (yellow/maroon bar), the combination of the EDC Average and standard deviation (purple box) provides a typical range of temperatures, which does a much better job of conveying what the “typical” temperature is.

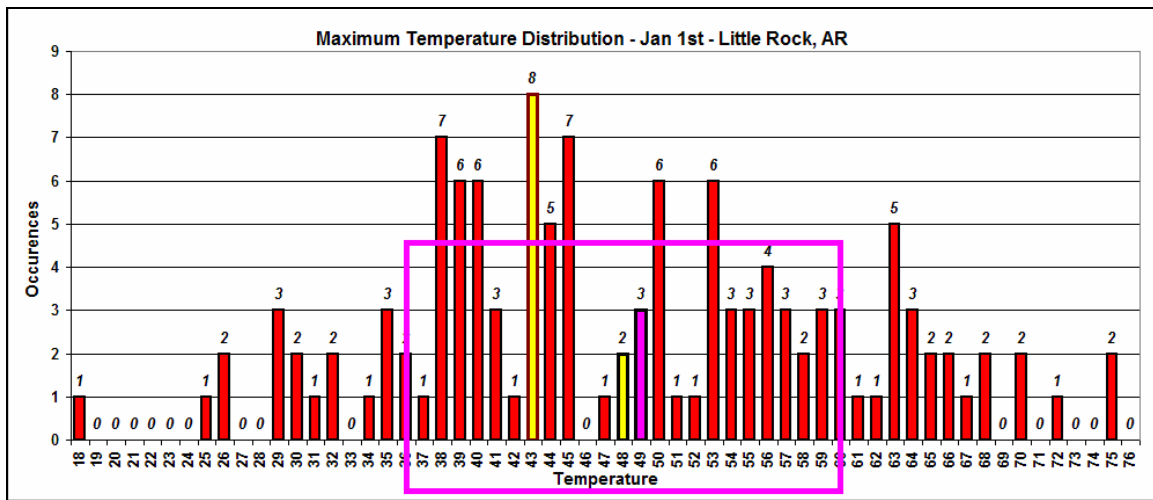


Figure 1

In addition to describing the average temperature and typical range, the EDC includes the absolute ranges for either the high or the low temperatures for a given day. These five pieces of information fully detail the typical and absolute range of temperatures for any calendar day.

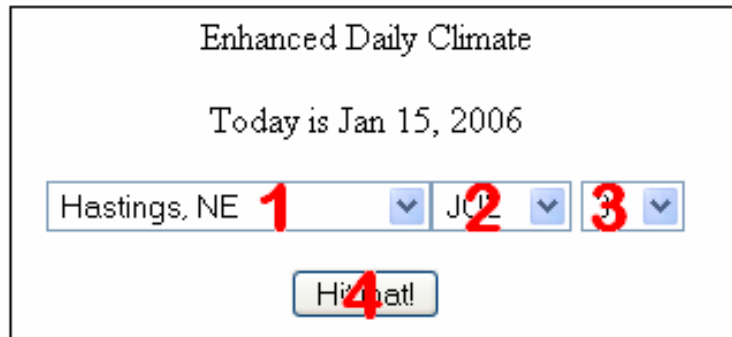
2. How is the EDC created?

Using daily observations from the complete data set for a station, pure mathematical averages are calculated for each day of the year. The standard deviation for each calendar day is also calculated. For both the maximum and minimum temperatures, the absolute ranges are determined, along with the year(s) of occurrence(s).

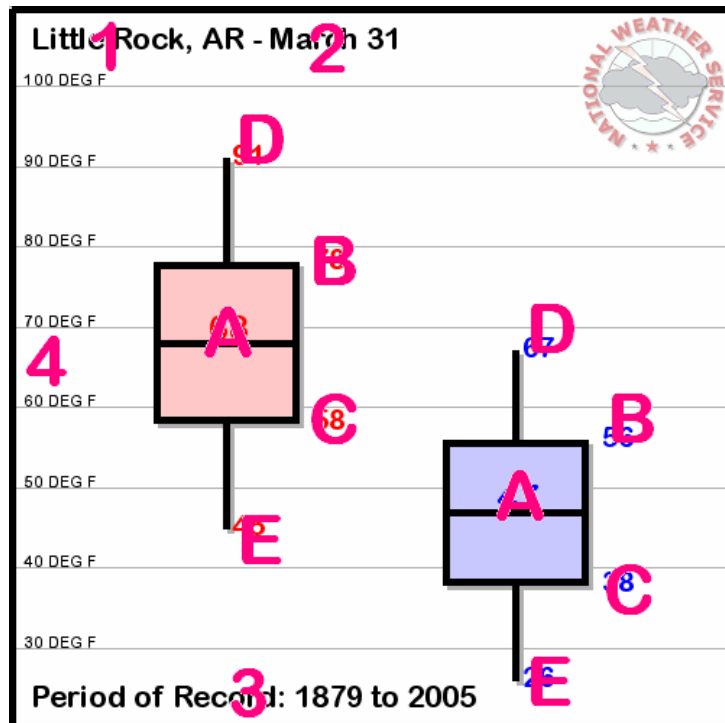
In order to obtain the typical range of temperatures for a given day, the standard deviation is added and subtracted from the daily average. Statistically, there is a ~67 percent chance that the temperature will occur within this range. This range more accurately describes what average is, rather than a single number.

3. How to I use and read the EDC?

The EDC is generated in an easy to read, graphical format. From the main page, the user will select (1) the desired station, (2) the month and (3) day of the month. Clicking the (4) submit button will send the query to a database. The program will then generate a chart with the acquired data.



A new page will load with the generated chart. The chart contains a wealth of information, but should be fairly simple to understand. Descriptive information on the cart includes (1) the station, (2) the date queried and (3) the Period of Record. The chart contains two pseudo box-and-whisker plots, one for maximum temperatures (red on the left) and minimum temperatures (blue on the right). A (4) temperature scale is located along the left hand edge of the chart. All temperatures are drawn to scale.



Each box-and-whisker plot includes five pieces of information: (A) the average temperature; (B and C) the typical range of temperatures, which is the average plus or minus the standard deviation; (D) the record high temperature; (E) the record low temperature.

4. Why are the EDC Averages sometimes different from the NCDC Normals?

The methods in which the EDC Averages are calculated differ significantly from how the NCDC Normals are calculated. For that reason, notable differences between the EDC Averages and NCDC Normals may occur. While the EDC averages and NCDC Normals will often be similar, if not the same, the lack of smoothing in the EDC averages will cause more fluctuations from day to day. When compared to the NCDC Normals, the EDC averages will appear to “move” more from day to day. This is common and expected.