

NOAA's National Weather Service Introduces New Local Climate Products

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NOAA's National Weather Service (NWS) will debut a new local seasonal temperature outlook, beginning in late July 2006. This product, called the Local 3-Month Temperature Outlook (L3MTO), is the first in a series of local climate products being developed and released by the NWS over the next 2 years. The L3MTO will be available on all NWS Weather Forecast Office (WFO) climate websites. For example, after July 21, 2006, the Salt Lake City WFO climate website (<http://www.weather.gov/climate/index.php?wfo=slc>) will offer the new L3MTO as the first choice under the "Climate Prediction" tab.

simplest forecasting procedure, independent data in forecast tests, and sufficiently testing the forecast process. A customer friendly product is designed with customer input and includes a variety of output components to accommodate a wide range of user needs. As the outlook evolves with time, continuous customer feedback will be important, to make the product as useful as possible.

The first developmental step of the L3MTO was to obtain and test the data for both the climate divisions and local stations, to ensure reliability. A simple linear regression analysis was used for downscaling station temperature from the temperature of the climate division that the station resides in. A number of stations exhibited a significant trend in the difference in temperatures at stations and climate divisions in the most recent years. In these instances, the regression parameters were adjusted to account for this trend; provided that the station-climate division relationship demonstrated sufficient strength (correlation of 0.5 or greater). Splus software computes the L3MTO and generates an enormous volume of output that is then assembled and uploaded to the internet as the final product.

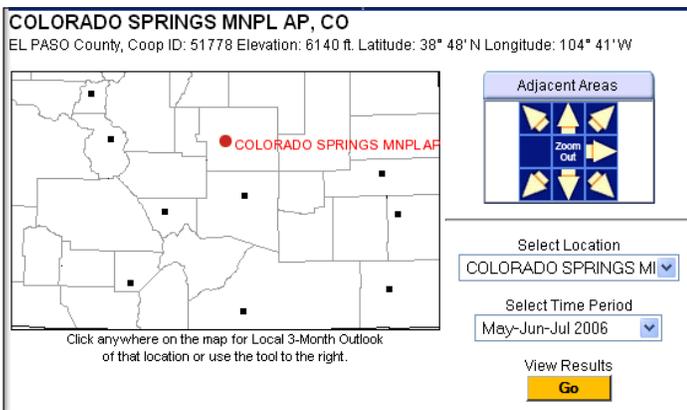


Figure 1a: Map of Western Colorado sites where the L3MTO is available. The name of the site will be displayed as the mouse moves over the site. The map can be changed to display Eastern Colorado by clicking the arrows to the top right of the map.

The L3MTO is downscaled or translated from the 3-month outlook that NOAA's Climate Prediction Center (CPC) issues on the third Thursday of each month (available at: <http://www.cpc.ncep.noaa.gov/products/predictions/90day/>). See pages 14 and 15 of this summary). The L3MTO features the same information as the national 3-month outlook: outlooks are provided for 3 categories (below, near, and above normal), and for the probability of exceedance. The difference is the L3MTO extracts more spatial detail, and also features additional interpretation information for all product components.

Development

During the L3MTO development, the process was scrutinized by numerous NOAA scientists to ensure the product is scientifically sound and customer friendly. A scientifically sound product includes using a reliable data source, the

L3MTO Product Details

Initially there will be approximately 1150 L3MTO locations available when the product debuts in late July, however this could

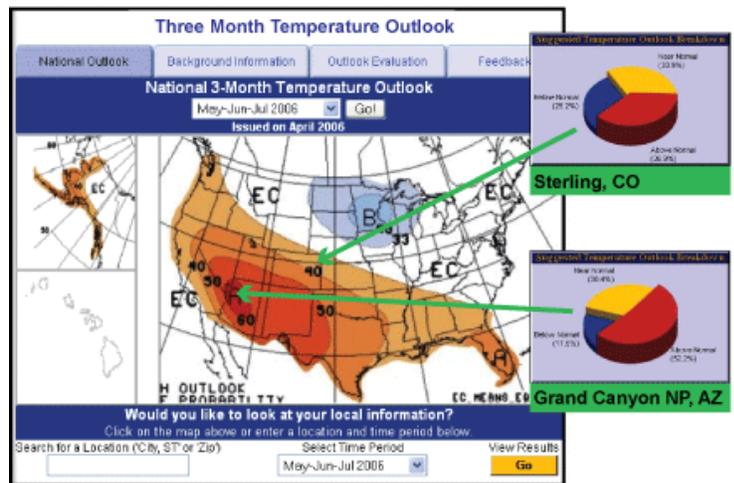


Figure 1b: CPC 3-month temperature outlook and 2 specific locations where the new L3MTO is available. Notice the L3MTO provides not only the most likely category, but also the probability for the other two categories to occur. The national 3-month temperature shows only the most likely category.

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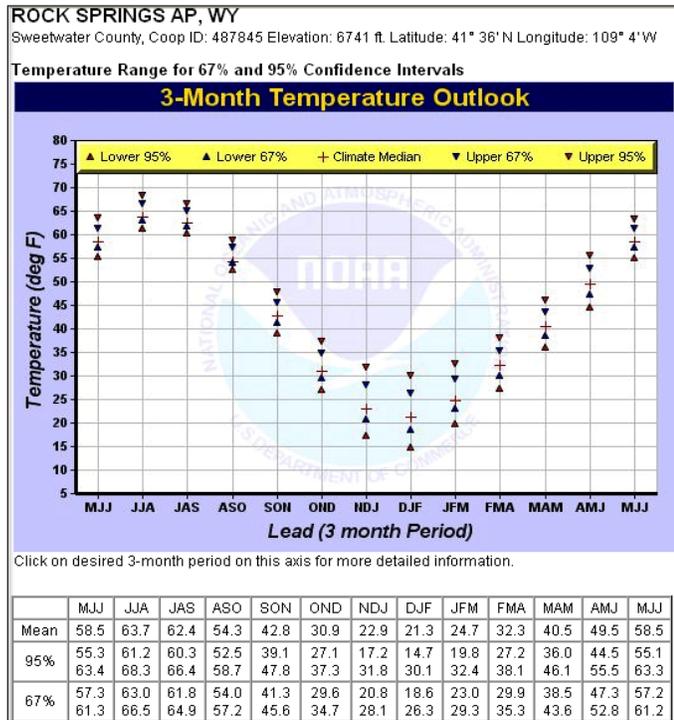


Figure 1c: The average temperature outlook for the Rock Springs Airport, WY (issued in April 2006), indicates that during July, August, & Sept. 2006:

- There is a 67% chance that the seasonal temperature will be within the range of 61.8 and 64.9 Deg F, and a 95% chance that the temperature will be greater than 60.3 and less than 66.4 Deg F.
- There is a greater chance (72.6%) that the temperature will be above the climatological median* of 62.4 Deg F, and a lesser chance (27.4%) that the temperature will be below the climatological median*.

*For the climatological reference information, the median statistic is reported. The median value means that during the present climatological reference period (1971-2000), the temperature in half of the years (50%) was greater than the median and in the other half (50%) less than.

increase to approximately 4,000 sites, depending upon user requirements. The product’s web interface will include clickable maps and text options to help navigate from one location to another. For example, Figure 1a displays all locations in western Colorado where the L3MTO is available. Users have the option of an arrow feature or a text pull down menu to move within and in-between states.

While CPC’s national 3-month outlook (Figure 1b) allows users to gain a quick “at-a-glance” overview of the entire country, it does not provide enough detail to be useful at the local level. The L3MTO is available in several different product components to meet the needs of a variety of users. The simplest product component, in the form of a pie chart, depicts the most likely category, as well as the probability for the other two categories to occur, while the national outlook only provides the most likely category. A simple text interpretation accompanies the pie chart to help explain the outlook.

The second product component of the L3MTO is a temperature range graph (Figure 1c), which displays all 3-month periods for an entire year. The climatological median is plotted and positioned between intervals of 67% confidence and 95% confidence. Interpretive text is also available by clicking in the confidence interval for any one of the 3-month periods.

The L3MTO product suite also includes a Probability of Exceedance component that provides information on the expected

chance for a certain temperature to be exceeded during a particular 3-month period (Figure 1d). The Probability of Exceedance comes in the form of a chart or a table, with the chart also displaying the observed 3-month temperature for the previous 5 years, for comparison.

Limitations and Verification

As with all long term outlooks and forecasts, limitations exist with the L3MTO. For example, the L3MTO is unable to provide a high confidence outlook for an exact 3 month temperature value or a departure from that value; the product is in probabilistic format. To help users determine the value of the outlook, information on the outlook’s skill (verification) is available. To help the user assess the skill of the L3MTO, every product component includes a link to the Forecast Verification Tool developed by the Climate Assessment of the Southwest (CLIMAS) at the University of Arizona, and expanded to include local climate outlook hindcast information and requirements. The outlook hindcast information is available from December 1994 to 2003. The requirements included a selection of forecast target seasons and specific years for computation of verification statistics. A customer feedback mechanism, tutorials, and helpful text to guide user interpretation, are also included. (See the feature article in the January 2006 Intermountain West Climate Summary for more information on the Forecast Verification Tool.)



More Local Products To Come

The Local 3-Month Temperature Outlook is the first local climate prediction product available on WFO climate webpages. The next local outlook product scheduled for release in the summer 2007 is the 3-Month Outlook of Local El Nino/La Nina Impacts on temperature and precipitation. A downscaled Local 3-Month Precipitation Outlook (L3MPO) is currently under development, with a debut targeted for early 2008. Eventually additional meteorological parameters will be added. More up-to-date information will be provided as the implementation date of each of the new local climate products approaches.

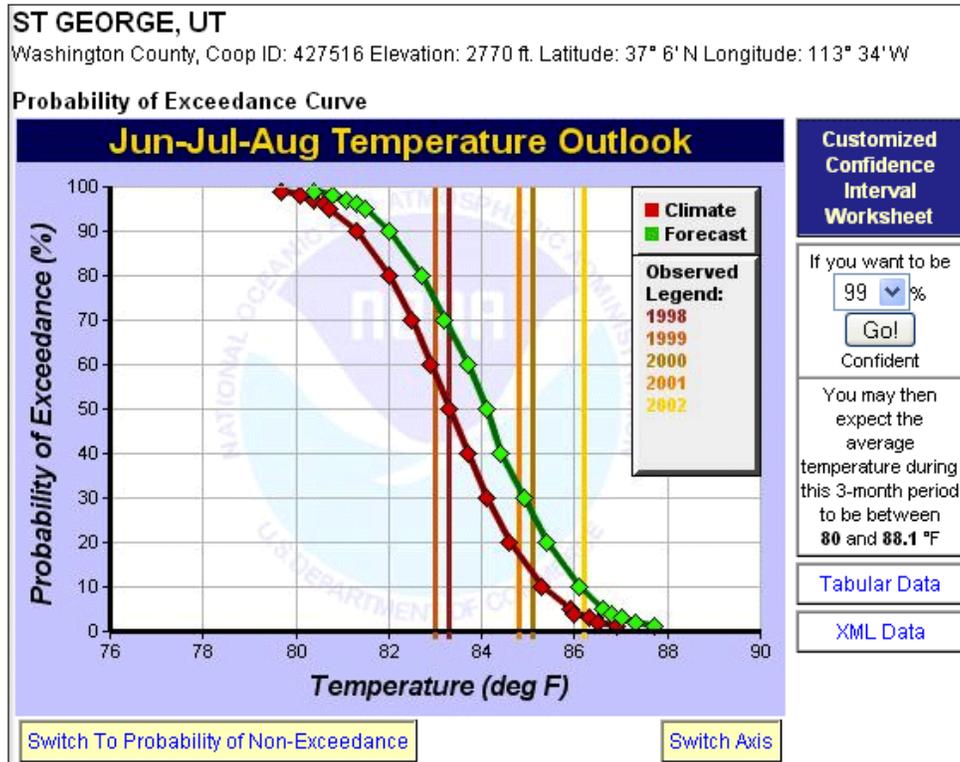


Figure 1d: Above is the Probability of Exceedance curve for St. George, UT during the 3-month period of June, July, and August 2006. The Probability of non-Exceedance and the Probability of Exceedance with the axis switched can also be displayed.

On the Web

- For more information about NOAA/NWS climate products visit: <http://www.cpc.ncep.noaa.gov/products>.

