

NATIONAL WEATHER SERVICE INSTRUCTION 10-1005

March 23, 2009

***Operations and Services
Climate Services, NWSPD 10-1005***

LOCAL CLIMATE OUTLOOKS

NOTICE: This publication is available at: <http://www.nws.noaa.gov/directives/>

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Type of Issuance: Routine

SUMMARY OF REVISIONS: Computation of the Local Climate Outlooks for specific locations in the United States is transferred from the Climate Services Division (CSD) to the Climate Prediction Center (CPC). CSD will assist in dissemination and display of the outlooks. There are no changes to the products.

(signed)

March 9, 2009

David B. Caldwell
Director, Office of Climate,
Water, and Weather Services

Date

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1. Introduction. The NWS Climate Prediction Center (CPC) will produce Local Climate Outlooks for specific locations in the United States using NOAA National Climatic Data Center (NCDC) data at stations and climate divisions. The Climate Services Division (CSD) will assist in dissemination and display of the outlooks. For outlooks in their area of responsibility, Weather Forecast Offices (WFO) will answer inquires, select locations, perform secondary quality control, add supplemental information, and report production problems to CPC ([per link](#)).

2. Local Three-Month Temperature Outlooks (L3MTO). An L3MTO is a probabilistic outlook for a specific location of the 3 month average daily temperature. L3MTO is available on the Internet (<http://www.weather.gov/climate/l3mto.php>) based on:

- a. The 3-Month Outlook from the Climate Prediction Center (CPC). For the contiguous U.S. (CONUS), this would be the CPC climate outlook for the CPC divisional area in which the site resides. See [NWS Instruction 10-1001 \(Climate Outlooks\) for details](#).
- b. CONUS sites only: A correlation between 3-month 1971-2000 climatological data for a local site and its respective CPC climate outlook division climatology, using a regression equation.
- c. Alaska and Hawaii sites: Computations of L3MTO Alaska and Hawaii sites follow NWS Instruction 10-1001 (Climate Outlooks) for 3-month temperature outlooks. Format of L3MTO Alaska and Hawaii sites display follows this instruction.

2.1 Mission Connection. The L3MTO provides information to decision makers who control activities sensitive to three month and intra annual climate variation. L3MTO enhances the level of detail and usability of CPC's 3-month climate outlooks. Therefore these outlooks will **not** help people planning events for specific dates or sub- periods, nor those seeking forecasts of monthly temperatures extremes. The L3MTOs will be of most use for economic and risk planning, particularly when used together with climatic reference material ([see NWS Instruction 10-1004](#)).

2.2 Issuance Guidelines.

2.2.1 Creation Software. Monthly L3MTOs are produced using a C-Shell (Linux based command language interpreter) script via a Linux platform automation process (i.e.: "cronjob"). The shell software collects/archives all data and executes programming functions written in language based Perl (an open source software program) to process all data and format output into Extensible Markup Language (XML). XML files are parsed via Perl and graphics in the formats of Joint Photographic Experts Group (JPEG), Graphic Interchange Format (GIF), and Portable Network Graphics (PNG) are generated with ChartDirector and Imagemagic (both licensed software).

2.2.2 Issuance Criteria. These are scheduled products.

2.2.3 Issuance Time. L3MTO is issued on the internet concurrently with CPC's three month climate products on the third Thursday of each month around 8:30 a.m. Eastern local time.

2.2.4 Valid Time. L3MTO is issued for the 13 three month outlook periods with lead times from 0.5 months to 12.5 months. E.G, L3MTO issued in mid-March, will be valid for April through June, May through July, and so on to April through June of the following year.

2.2.5 Product Expiration Time. The 0.5 month lead time outlook expires at the beginning of the valid time of the first 3 month outlook. The other outlooks expire when the next set of outlooks are issued (i.e. the third Thursday of the following month).

2.3. Technical Description. The L3MTO will consist of a variety of graphs and corresponding tables and text. All L3MTO products for each location can be accessed using several web navigational tools embedded in the graphics of national and local web pages and through the four main tabs located on each L3MTO web page (top Figure 1).

The "National Outlook" Tab (upper left of Figure 1) contains the CPC 3-Month Outlook in map format with links to other seasons available using a dropdown menu. The "Local Outlook" tab (to the right of the "National Outlook" tab) provides access to L3MTO information in the formats described in the following sections.

2.3.1 Content.

a. Three Category Outlook: CPC will express the outlook as forecasted probability (in percent) that the average 3-month temperature will fall into each of three categories: above, below, or near normal. CPC's reference to normal climatology comes from the 30-year (1971-2000) mean 3-month temperature and category limits. (See [NWS Instruction 10-1004](#) for details). CPC defines the categories as climatologically equally likely; e.g., the top 10 cases of a thirty year record define the above category, the middle 10 cases define the normal category, and the bottom 10 cases define the below category.

b. Range Outlook. CPC will express the expected range of the average 3-month temperature, total precipitation, or average/total for other parameters. Expected range outlooks are produced for five confidence intervals or levels of expected chance: 99%, 95%, 90%, 75%, and 50%.

c. Probability of Exceedence/non Exceedence (POE/PoNE) Outlooks. CPC will express the POE/PoNE outlooks as the expected chance of the average three month temperature, total precipitation, or average/total for other parameters exceeding or not exceeding a particular probability value. POE and PoNE are produced for 19 values: 99%, 98%, 97%, 96%, 95%, 90%, 80%, 70%, 60%, 50%, 40%, 30%, 20%, 10%, 5%, 4%, 3%, 2%, and 1%.

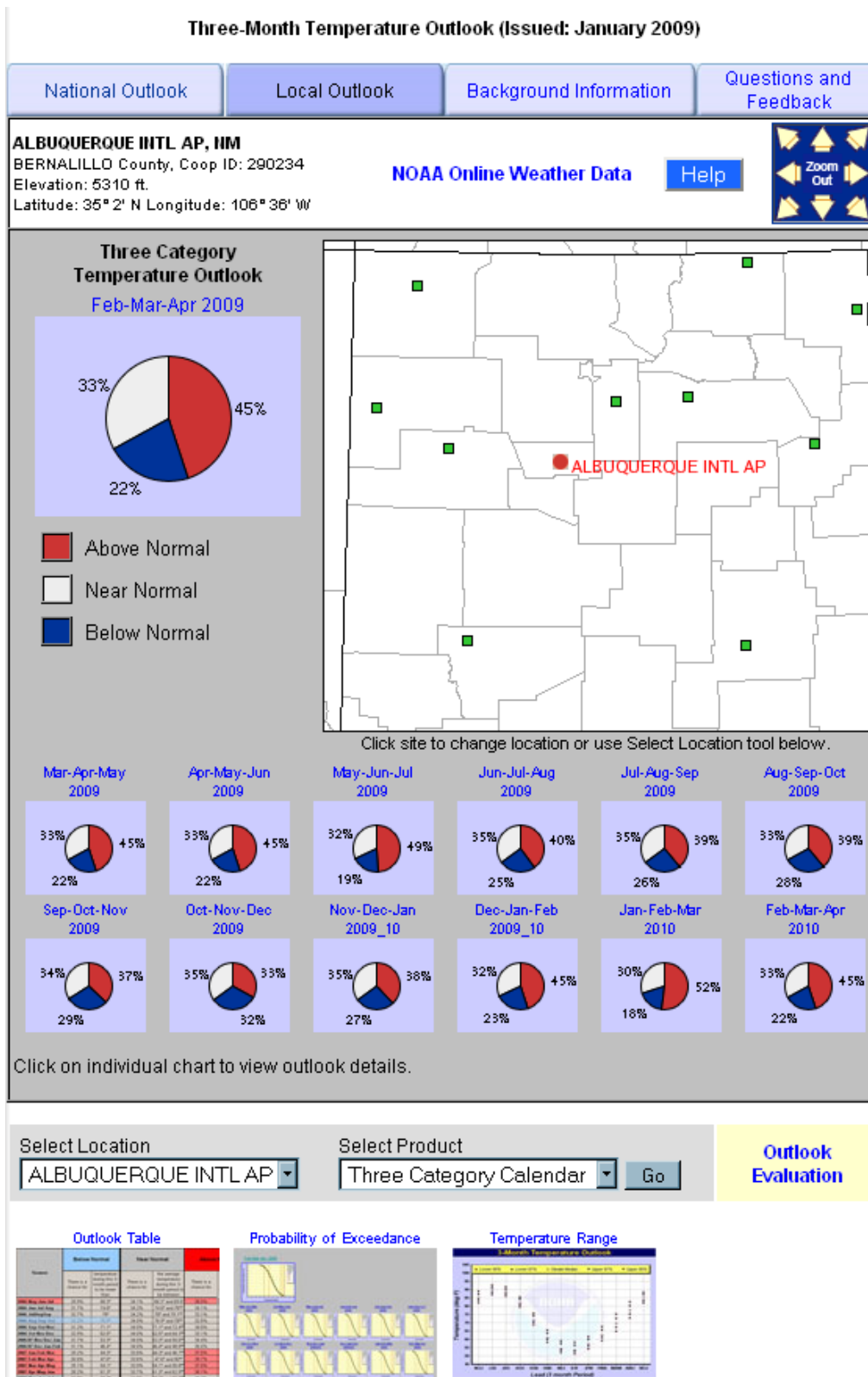


Figure 1. L3MTO web page example for Albuquerque International Airport, New Mexico

2.3.2 Format.

a. Three Category Outlook examples.

ALBUQUERQUE INTL AP, NM
 BERNALILLO County, Coop ID: 290234
 Elevation: 5310 ft.
 Latitude: 35° 2' N Longitude: 106° 36' W

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Three Category Temperature Outlook: Feb-Mar-Apr 2009

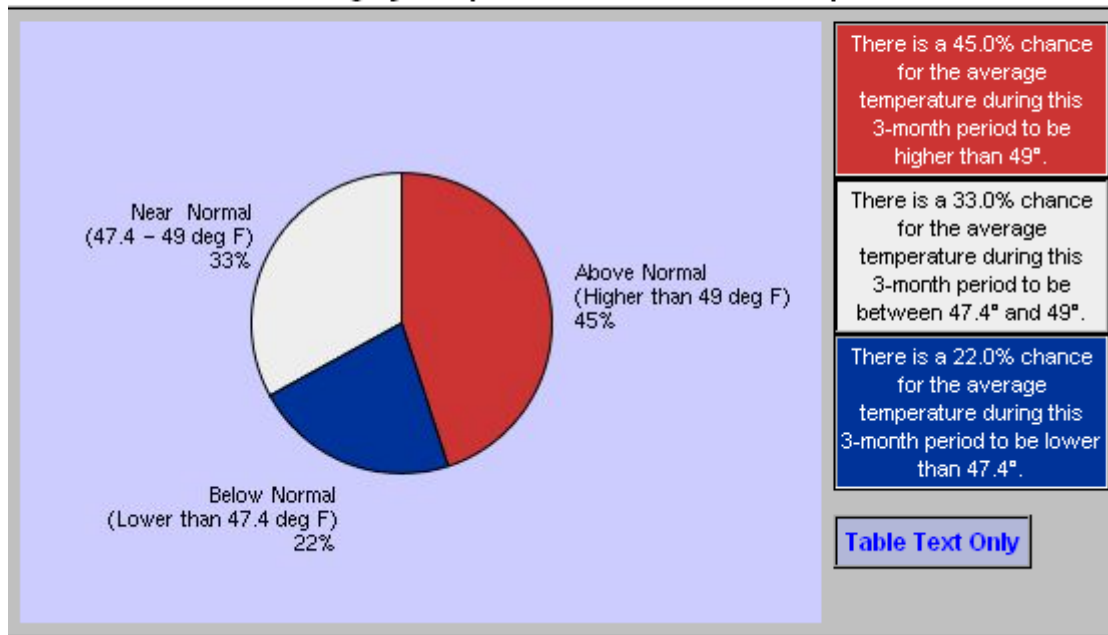


Figure 2. Example for L3MTO “Pie” Chart combining 2 formats: graph and text interpretation statement. Issuance date was Thursday, January 15, 2009 (0.5 month lead).

ALBUQUERQUE INTL AP, NM
 BERNALILLO County, Coop ID: 290234
 Elevation: 5310 ft.
 Latitude: 35° 2' N Longitude: 106° 36' W

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Three Category Outlook Table

Season	Below Normal		Near Normal		Above Normal	
	There is a chance for	temperature during this 3-month period to be lower than	There is a chance for	the average temperature during this 3-month period to be between	There is a chance for	temperature during this 3-month period to be higher than
Feb-Mar-Apr 2009	22.0%	47.4°	33.0%	47.4° and 49°	45.0%	49°
Mar-Apr-May 2009	22.0%	54.9°	33.0%	54.9° and 56.7°	45.0%	56.7°
Apr-May-Jun 2009	22.0%	63.9°	33.0%	63.9° and 65.6°	45.0%	65.6°
May-Jun-Jul 2009	19.0%	71.8°	32.0%	71.8° and 73.1°	49.0%	73.1°
Jun-Jul-Aug 2009	25.0%	75.8°	35.0%	75.8° and 76.9°	40.0%	76.9°
Jul-Aug-Sep 2009	26.0%	73.9°	35.0%	73.9° and 75°	39.0%	75°
Aug-Sep-Oct 2009	28.0%	66.7°	33.0%	66.7° and 67.9°	39.0%	67.9°
Sep-Oct-Nov 2009	29.0%	56°	34.0%	56° and 57.3°	37.0%	57.3°
Oct-Nov-Dec 2009	32.0%	44.9°	35.0%	44.9° and 46.3°	33.0%	46.3°
Nov-Dec-Jan 2009_10	27.0%	37.4°	35.0%	37.4° and 39.2°	38.0%	39.2°
Dec-Jan-Feb 2009_10	23.0%	36.4°	32.0%	36.4° and 38.3°	45.0%	38.3°
Jan-Feb-Mar 2010	18.0%	40.6°	30.0%	40.6° and 42.4°	52.0%	42.4°
Feb-Mar-Apr 2010	22.0%	47.4°	33.0%	47.4° and 49°	45.0%	49°

Legend: **Blue**, **Gray**, or **Red** Shading indicate an enhanced chance for **Below**, **Near**, or **Above** Normal Category respectively.

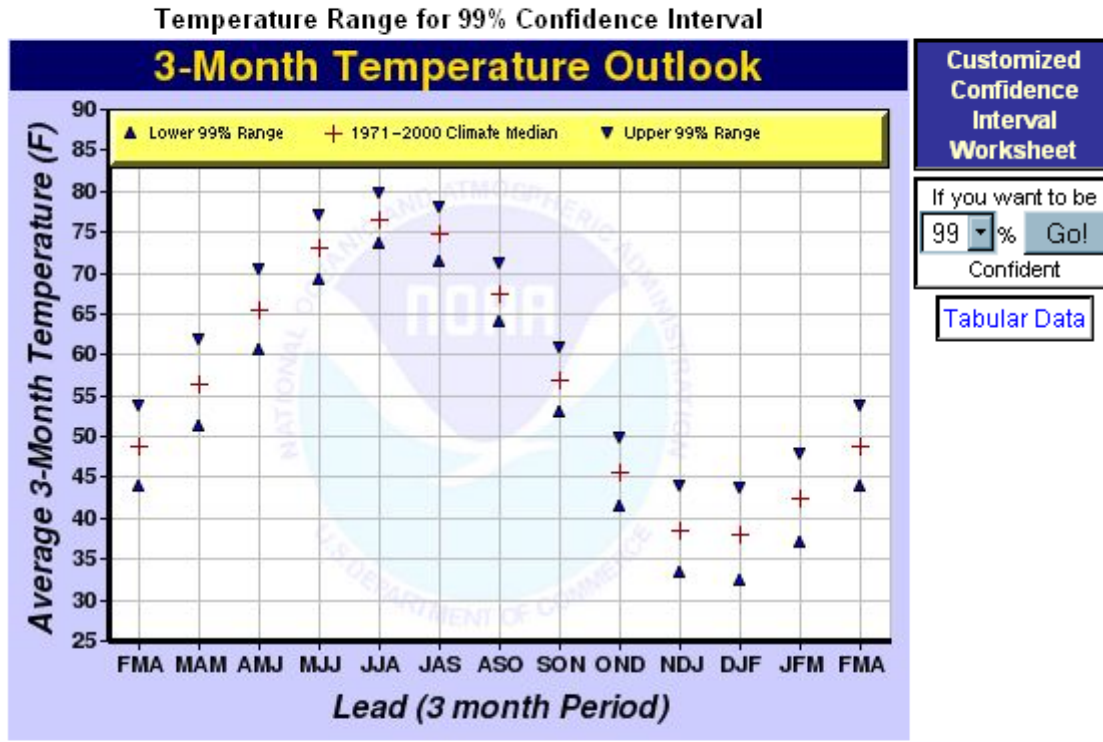
Figure 3. Example of L3MTO combining two formats: data table and text interpretation statements Issuance date was Thursday, January 15, 2009 (0.5 month lead).

b. Range Outlook example.

ALBUQUERQUE INTL AP, HM
 BERNALILLO County, Coop ID: 290234
 Elevation: 5310 ft.
 Latitude: 35° 2' N Longitude: 106° 36' W

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Current % Confidence Interval Table													
	FMA	MAM	AMJ	MJJ	JJA	JAS	ASO	SON	OND	NDJ	DJF	JFM	FMA
Median	48.8	56.5	65.4	73.1	76.6	74.7	67.5	56.8	45.6	38.6	38.0	42.5	48.8
99%	53.7	61.7	70.3	77.0	79.7	78.0	71.1	60.7	49.7	43.8	43.7	47.9	53.7
	43.9	51.3	60.5	69.2	73.5	71.4	63.9	52.9	41.5	33.4	32.3	37.1	43.9

Figure 4. Example of L3MTO Temperature Range Plot uses graph, table and text interpretation formats. Issuance date was Thursday January 15, 2009. ASO=August, September, and October; SON=September, October, and November; etc.

c. POE outlook example.

ALBUQUERQUE INTL AP, NM
 BERNALILLO County, Coop ID: 290234
 Elevation: 5310 ft.
 Latitude: 35° 2' N Longitude: 106° 36' W

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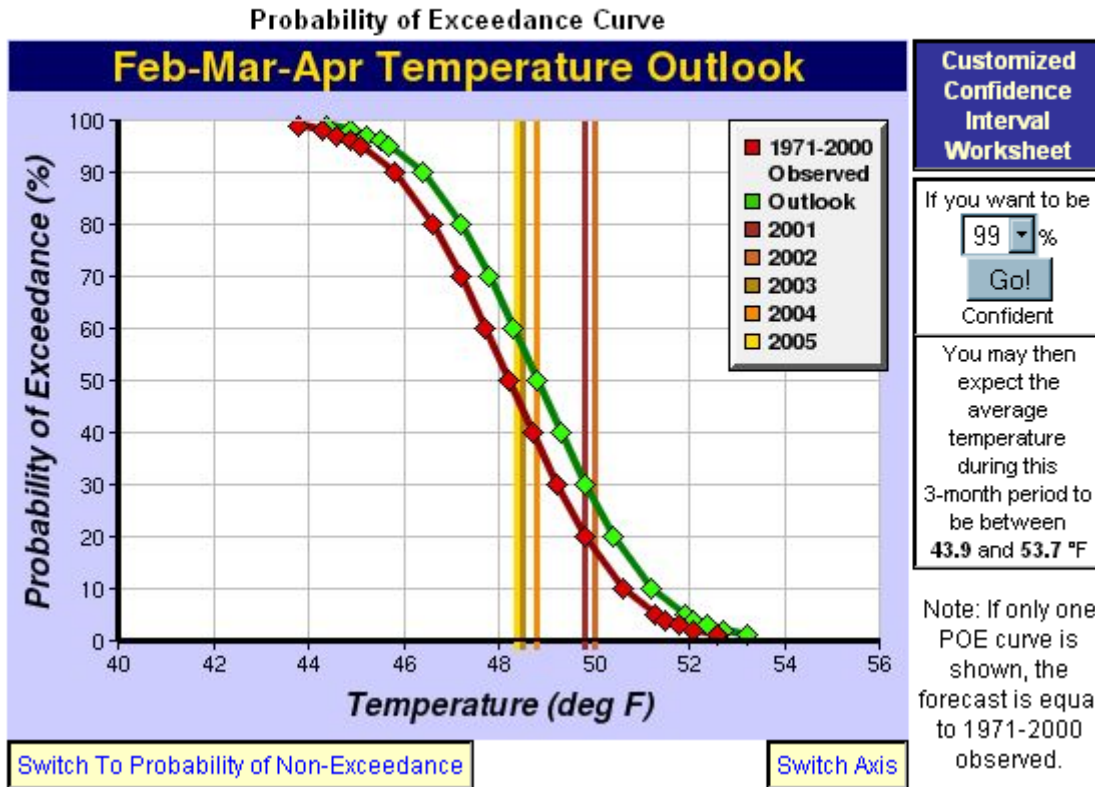


Figure 5. Example of L3MTO POE presented in graph format: x-y plot. Issuance date was Thursday, January 15, 2009 (0.5 month lead).

ALBUQUERQUE INTL AP, HM
 BERNALILLO County, Coop ID: 290234
 Elevation: 5310 ft.
 Latitude: 35° 2' N Longitude: 106° 36' W

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Probability of Exceedance Table

	FMA	MAM	AMJ	MJJ	JJA	JAS	ASO	SON	OND	NDJ	DJF	JFM	FMA
**R	0.9	0.9	0.9	0.8	0.7	0.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9
99%	44.4	51.8	61.0	69.6	73.8	71.7	64.2	53.3	41.9	33.9	32.9	37.6	44.4
98%	44.9	52.4	61.5	70.0	74.1	72.0	64.6	53.7	42.3	34.5	33.5	38.2	44.9
97%	45.2	52.7	61.8	70.3	74.3	72.3	64.9	54.0	42.6	34.8	33.9	38.6	45.2
96%	45.5	53.0	62.1	70.5	74.5	72.4	65.0	54.2	42.8	35.1	34.1	38.8	45.5
95%	45.7	53.2	62.3	70.6	74.6	72.6	65.2	54.3	43.0	35.3	34.4	39.0	45.7
90%	46.4	53.9	63.0	71.2	75.1	73.0	65.7	54.9	43.5	36.0	35.2	39.8	46.4
80%	47.2	54.8	63.8	71.8	75.6	73.6	66.3	55.5	44.3	36.9	36.1	40.7	47.2
70%	47.8	55.5	64.4	72.3	76.0	74.0	66.8	56.0	44.8	37.6	36.8	41.4	47.8
60%	48.3	56.0	64.9	72.7	76.3	74.4	67.1	56.4	45.2	38.1	37.4	42.0	48.3
50%	48.8	56.5	65.4	73.1	76.6	74.7	67.5	56.8	45.6	38.6	38.0	42.5	48.8
40%	49.3	57.0	65.9	73.5	76.9	75.0	67.9	57.2	46.0	39.1	38.6	43.0	49.3
30%	49.8	57.5	66.4	73.9	77.2	75.4	68.2	57.6	46.4	39.6	39.2	43.6	49.8
20%	50.4	58.2	67.0	74.4	77.6	75.8	68.7	58.1	46.9	40.3	39.9	44.3	50.4
10%	51.2	59.1	67.8	75.0	78.1	76.4	69.3	58.7	47.7	41.2	40.8	45.2	51.2
5%	51.9	59.8	68.5	75.6	78.6	76.8	69.8	59.3	48.2	41.9	41.6	46.0	51.9
4%	52.1	60.0	68.7	75.7	78.7	77.0	70.0	59.4	48.4	42.1	41.9	46.2	52.1
3%	52.4	60.3	69.0	75.9	78.9	77.1	70.1	59.6	48.6	42.4	42.1	46.4	52.4
2%	52.7	60.6	69.3	76.2	79.1	77.4	70.4	59.9	48.9	42.7	42.5	46.8	52.7
1%	53.2	61.2	69.8	76.6	79.4	77.7	70.8	60.3	49.3	43.3	43.1	47.4	53.2
*Mean	48.8	56.5	65.4	73.1	76.6	74.7	67.5	56.8	45.6	38.6	38.0	42.5	48.8
StDev	1.9	2.0	1.9	1.5	1.2	1.3	1.4	1.5	1.6	2.0	2.2	2.1	1.9

Color Legend	Deviation from Climatology (deg F)	Color Legend	Deviation from Climatology (deg F)	Color Legend	Deviation from Climatology (deg F)	Table Text Only
	< -2.5		-0.5 thru -1.0		1.5 thru 2.0	Switch To Probability of Non-Exceedance Table
	-2.0 thru -2.5		-0.5 > deg F < 0.5		2.0 thru 2.5	
	-1.5 thru -2.0		0.5 thru 1.0		> 2.5	
	-1.0 thru -1.5		1.0 thru 1.5			

Figure 6. Example of L3MTO Temperature POE Table issued on Thursday, January 15, 2009.

2.4 Updates, Amendments, and Corrections. CPC will not issue updates or amendments.