

# *The Pennsylvania Observer*

December 4, 2008



## **November 2008 – Pennsylvania Weather Recap**

*Written by: Daniel Pollak*

November 2008 was definitely a month with a wide variety of weather in the Commonwealth of Pennsylvania. The first week showed temperatures well above average across the state with large ridges of high pressure dominating the weather pattern interspersed with weak low pressure systems. On the 1<sup>st</sup> of the month, afternoon high temperatures soared into the mid to upper sixties with some cities such as Philadelphia even surpassing the seventy degree mark. A back door cold front the night of the 1<sup>st</sup> brought temperatures down, but not for long. By the 3<sup>rd</sup>, the warm sector from a low tracking into central Canada brought warm air deep into the northern tier of the United States. The weather remained mainly calm and dry for the rest of the work week with the only exception being a coastal low that brought rain to eastern portions of the state on November 6<sup>th</sup>. With temperatures reaching into the sixties and low seventies, the first week of November proved to be unseasonably warm and pleasant. The weather took a drastic change as a strong cold front passed over the state on the 8<sup>th</sup>. The front brought rain showers, cooler more seasonal weather, and also started up some Lake Effect snow from Lake Erie. Scattered snow showers were seen in the northwest part of the state on the 9<sup>th</sup> and 10<sup>th</sup>. Brisk autumn temperatures and brilliant sunshine prevailed for the eastern parts of the state not affected by the snow showers. A ridge of high pressure built in across the state on the 11<sup>th</sup> and 12<sup>th</sup> ahead of a low approaching from the mid-south. As the low passed to the northwest of Pennsylvania, it brought with it another ridge of warmer air and steady rains which dropped anywhere from a quarter of an inch to nearly an inch of rain around Philadelphia. The 14<sup>th</sup> and 15<sup>th</sup> stayed very warm with the jet stream pushing warm air deep into New England. The high in Philadelphia on the 15<sup>th</sup> soared to 72 degrees, some 17 degrees above average! As the jet stream pushed eastward, an area of low-pressure moved into the state on the 15<sup>th</sup> bringing with it a large dose of rain in which many locales reported an inch or more. Western areas of the Commonwealth even reported snow late in the day as the strong trough passed the region. This strong cold front signaled the end of the warm November weather and the start of cooler than average temperatures which prevailed for the remainder of the month. The lake-effect snow machine came into full swing with Erie officially receiving 8.8 inches of fresh snow on the 16<sup>th</sup>. It remained active for most of the rest of the month. Erie reported at least some snow every day for the rest of the month except on just four days. From the 17<sup>th</sup> – 19<sup>th</sup>, reinforcing shots of cold air invaded Pennsylvania keeping maximum temperatures near 40 and lows around 30. Pittsburgh was one of the coldest parts of the state with temperatures barely getting above freezing. 2-3 inches of snow fell across the Pittsburgh metro during these days, but this is nothing compared to areas in Erie and Crawford counties which received anywhere from 10 inches to 20.8 inches of snow! A reinforcing Alberta clipper which traversed the state late on the 20<sup>th</sup> brought more some flurries. The lake effect snow bands that formed after the passage of its front were substantial in that they did not break up over the mountains. One particular snow squall stretched from Lake Erie almost continuously to Philadelphia. Some of the southwestern and northwestern suburbs of Philadelphia received an inch or two of the white stuff. The key story of the weather during the 19<sup>th</sup> – 22<sup>nd</sup> was the strong northwesterly flow which brought in the Canadian air and lake effect snow. On the 21<sup>st</sup>, both Philadelphia and Harrisburg broke their record daily snowfall. On the 22<sup>nd</sup>,

Williamsport tied a record low of 15 degrees. On the same day, Harrisburg reported a high of 34 degrees which was 16 degrees below the seasonal average. A strong high pressure system centered over the Ohio Valley kept the unseasonably frigid air in place through the 23<sup>rd</sup>. On the 24<sup>th</sup>, the high pushed east as a low pressure approached from the west. The leading edge of the storm brought snow to many parts of the state, but as temperatures rose into the upper 30s and lower 40s overnight, most places that started as snow, changed to rain. Areas in the south-east quadrant of the state started and remained rain throughout. The 26<sup>th</sup> and 27<sup>th</sup> were pleasant days with clouds and sun mixed. An Alberta clipper came through the region overnight on Thanksgiving into Black Friday which brought a few clouds, but ultimately allowed for high pressure to sit over the state. While a little on the chilly side, shoppers who went out early for the good deals, had mostly clear, crisp weather. The 29<sup>th</sup> was much of the same with high pressure prevailing. This did not last long though because a deep, fast moving low pressure system approached the state overnight on the 29<sup>th</sup>. Temperatures under the high pressure were well below freezing. As the low approached, temperatures did not initially rise that fast causing precipitation to start as snow, sleet, and freezing rain in much of the central and northern parts of the state. This caused problems on the state's highways which were already crowded with Thanksgiving travelers. As the low moved northeast into the Great Lakes, most places warmed above freezing causing the precipitation to change to rain. November 2008 was quite the month of extremes with temperatures nearing twenty degrees above and below average at times during the month. Precipitation amounts were not enough to make up for the deficit over the last few months causing the Pennsylvania Department of Environmental Protection to issue a drought watch for North Central and Western portions of the state.

Here are the weather extremes across Pennsylvania (**observations taken at 8AM EDT**) during November 2008 from the NWS Cooperative & ASOS Networks. The extremes occurred in the 24-hour period prior to the date listed.

<b>Parameter</b>	<b>Location</b>	<b>Value</b>	<b>Date (8 AM EDT)</b>	<b>County</b>
Highest Temperature	New Castle	<b>80°F</b>	November 7 <sup>th</sup>	Lawrence
Lowest Temperature	Bradford	<b>7°F</b>	November 19 <sup>th</sup>	McKean
Greatest Cumulative Liquid Precipitation	Philadelphia	<b>3.51"</b>	-	Philadelphia
Least Cumulative Liquid Precipitation	Wolfsburg	<b>1.28"</b>	-	Bedford
Greatest Cumulative Snowfall	Chandlers Valley	<b>37"</b>	-	Warren

# ***Weather Stories***

**A New Understanding of Iceberg Formation May Aid Climate Studies**

**<http://www.nytimes.com/2008/12/02/science/02obice.html?ref=science>**

**How Climate Changes Shook Up History: Experts to Speak**

**[http://www.philly.com/inquirer/health\\_science/daily/20081112\\_How\\_climate\\_changes\\_shook\\_up\\_history\\_Experts\\_to\\_speak.html](http://www.philly.com/inquirer/health_science/daily/20081112_How_climate_changes_shook_up_history_Experts_to_speak.html)**

**Hurricane Sets Record for U.S. Strikes by Storms**

**<http://www.bloomberg.com/apps/news?pid=20601103&sid=apYqfEfa5x9o&refer=us>**

**PA Utility Asks Customers to Conserve Water**

**[http://www.watertechonline.com/news.asp?N\\_ID=70939](http://www.watertechonline.com/news.asp?N_ID=70939)**

**Hunters Encounter a Disappointing Start to Buck Season**

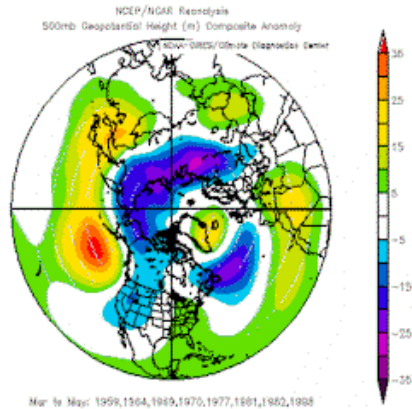
**<http://www.examiner.com/x-1890-North-Central-PA-Communities-Examiner-y2008m12d2-Disappointing-start-to-buck-season>**

**Snow's a Welcome Sight as Bear Hunters Hit Jackpot**

**[http://www.timesleader.com/sports/Snow\\_rsquo\\_s\\_a\\_welcome\\_sight\\_as\\_bear\\_hunters\\_hit\\_jackpot\\_11-30-2008.html](http://www.timesleader.com/sports/Snow_rsquo_s_a_welcome_sight_as_bear_hunters_hit_jackpot_11-30-2008.html)**

# *The Pennsylvania Observer*

## The Pennsylvania State Climatologist



### **December Climate Highlight:**

The first climate highlight compares the divisional snowfall totals that followed when Pennsylvania Climate Division 8 was drier than normal during September-October, Pennsylvania Climate Division 1 was wetter than average during the same months, and the statewide August through October temperatures were below normal.

The second climate highlight shows the expected temperature and precipitation anomalies for this coming winter (December to February) by using the analog years in which the following criteria was met: a wet September through October in Nebraska and/or Kansas; a dry August through October in Kentucky and/or Ohio, plus cooler than average temperatures from July through September in Kansas and/or Texas.

## Divisional Snowfall Totals

Analog Years: 1963, 1965, 1974, 1979, 1985, 2004

**1963:**

	Div 1	Div 2	Div 3	Div 4	Div 5	Div 6	Div 7	Div 8	Div 9	Div 10
Oct	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nov	1.4	0.6	0.0	2.9	1.1	3.1	1.4	1.7	3.0	7.0
Dec	16.2	10.8	10.8	15.1	12.3	13.9	20.0	19.1	18.1	37.9
Jan	25.8	15.1	11.9	7.2	23.1	28.5	24.2	23.2	22.0	25.4
Feb	25.5	17.6	18.6	13.5	18.7	20.0	20.1	30.8	16.6	20.7
Mar	8.9	6.2	7.7	5.4	2.3	4.5	2.8	6.8	6.8	6.5
April	0.3	0.0	0.2	0.0	0.0	0.6	0.6	1.7	0.9	1.9
May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Seasonal Total:</b>	<b>78.1</b>	<b>50.3</b>	<b>49.2</b>	<b>44.1</b>	<b>57.5</b>	<b>70.6</b>	<b>69.1</b>	<b>83.3</b>	<b>67.4</b>	<b>99.4</b>
<b>Seasonal Normal:</b>	<b>49.0</b>	<b>26.0</b>	<b>24.0</b>	<b>25.8</b>	<b>33.1</b>	<b>60.2</b>	<b>35.3</b>	<b>51.4</b>	<b>44.3</b>	<b>76.2</b>

Table 1: The seasonal divisional snowfall amounts as compared to the norm.

**1965:**

	Div 1	Div 2	Div 3	Div 4	Div 5	Div 6	Div 7	Div 8	Div 9	Div 10
Oct	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.4
Nov	0.0	0.0	0.0	0.0	0.0	1.4	0.1	1.5	1.0	5.8
Dec	4.3	1.8	1.7	1.0	0.6	1.3	3.6	1.4	1.5	5.6
Jan	22.2	21.3	22.3	12.0	9.3	16.5	23.7	30.0	21.3	30.8
Feb	17.5	13.8	12.2	1.0	1.2	2.0	9.7	16.0	12.0	8.5
Mar	2.7	0.4	0.0	15.0	7.1	9.0	3.8	4.1	4.7	11.4
April	0.7	0.0	0.0	0.0	1.6	11.2	2.5	4.5	2.4	4.2
May	0.1	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.4	1.4
<b>Seasonal Total:</b>	<b>47.5</b>	<b>37.3</b>	<b>36.2</b>	<b>29.0</b>	<b>19.8</b>	<b>42.3</b>	<b>44.0</b>	<b>57.5</b>	<b>43.3</b>	<b>68.1</b>
<b>Seasonal Normal:</b>	<b>49.0</b>	<b>26.0</b>	<b>24.0</b>	<b>25.8</b>	<b>33.1</b>	<b>60.2</b>	<b>35.3</b>	<b>51.4</b>	<b>44.3</b>	<b>76.2</b>

Table 2: The seasonal divisional snowfall amounts as compared to the norm.

**1974:**

	Div 1	Div 2	Div 3	Div 4	Div 5	Div 6	Div 7	Div 8	Div 9	Div 10
Oct	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.1	0.8
Nov	3.1	0.1	0.0	0.0	0.0	3.8	0.9	1.9	1.8	3.9
Dec	6.1	2.7	7.5	12.4	2.0	9.7	13.8	28.0	13.9	16.6
Jan	15.0	11.9	6.6	5.6	10.7	11.3	11.9	20.6	11.7	16.3
Feb	14.0	10.4	9.3	4.6	12.2	11.0	14.7	20.0	11.8	16.5
Mar	4.9	2.8	2.1	0.3	4.2	5.9	7.0	9.0	7.1	15.9
April	1.5	0.0	0.0	0.0	0.0	1.7	0.9	0.9	1.0	6.9
May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Seasonal Total:</b>	<b>44.7</b>	<b>27.9</b>	<b>25.5</b>	<b>22.9</b>	<b>29.1</b>	<b>43.5</b>	<b>49.3</b>	<b>80.6</b>	<b>47.4</b>	<b>76.9</b>
<b>Seasonal Normal:</b>	<b>49.0</b>	<b>26.0</b>	<b>24.0</b>	<b>25.8</b>	<b>33.1</b>	<b>60.2</b>	<b>35.3</b>	<b>51.4</b>	<b>44.3</b>	<b>76.2</b>

Table 3: The seasonal divisional snowfall amounts as compared to the norm.

**1979:**

	Div 1	Div 2	Div 3	Div 4	Div 5	Div 6	Div 7	Div 8	Div 9	Div 10
Oct	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.6
Nov	4.7	3.2	3.2	3.4	3.5	0.8	0.1	1.1	0.9	3.0
Dec	10.2	0.9	0.1	0.3	2.4	6.3	2.6	2.3	2.5	9.2
Jan	1.5	8.1	9.7	10.5	8.1	3.2	3.3	8.7	10.0	9.7
Feb	10.8	19.4	25.8	22.9	17.0	9.5	7.1	7.6	10.3	15.9
Mar	14.4	0.1	0.0	0.0	0.0	11.0	11.0	11.0	9.8	12.2
April	2.0	0.0	0.0	0.0	0.3	2.9	0.2	0.1	0.2	0.3
May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Seasonal Total:</b>	<b>43.6</b>	<b>31.7</b>	<b>38.8</b>	<b>37.1</b>	<b>31.3</b>	<b>33.8</b>	<b>24.3</b>	<b>30.8</b>	<b>33.8</b>	<b>50.9</b>
<b>Seasonal Normal:</b>	<b>49.0</b>	<b>26.0</b>	<b>24.0</b>	<b>25.8</b>	<b>33.1</b>	<b>60.2</b>	<b>35.3</b>	<b>51.4</b>	<b>44.3</b>	<b>76.2</b>

Table 4: The seasonal divisional snowfall amounts as compared to the norm.

**1985:**

	Div 1	Div 2	Div 3	Div 4	Div 5	Div 6	Div 7	Div 8	Div 9	Div 10
Oct	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nov	2.4	0.0	0.1	0.0	0.0	3.9	0.0	0.1	0.0	0.4
Dec	14.7	2.7	3.0	4.7	4.3	13.1	12.0	13.9	12.2	35.4
Jan	12.9	5.7	4.3	4.1	7.0	19.6	9.4	17.6	13.1	17.7
Feb	11.6	16.5	15.3	20.2	13.9	22.5	18.7	18.2	14.0	15.2
Mar	2.1	0.0	0.1	0.3	0.3	4.0	1.4	3.6	3.0	7.3
April	8.3	1.1	0.9	0.0	0.0	7.5	0.2	5.5	2.0	4.4
May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Seasonal Total:</b>	<b>52.0</b>	<b>26.0</b>	<b>23.7</b>	<b>29.3</b>	<b>25.5</b>	<b>70.6</b>	<b>41.7</b>	<b>58.9</b>	<b>44.3</b>	<b>80.4</b>
<b>Seasonal Normal:</b>	<b>49.0</b>	<b>26.0</b>	<b>24.0</b>	<b>25.8</b>	<b>33.1</b>	<b>60.2</b>	<b>35.3</b>	<b>51.4</b>	<b>44.3</b>	<b>76.2</b>

Table 5: The seasonal divisional snowfall amounts as compared to the norm.

**2004:**

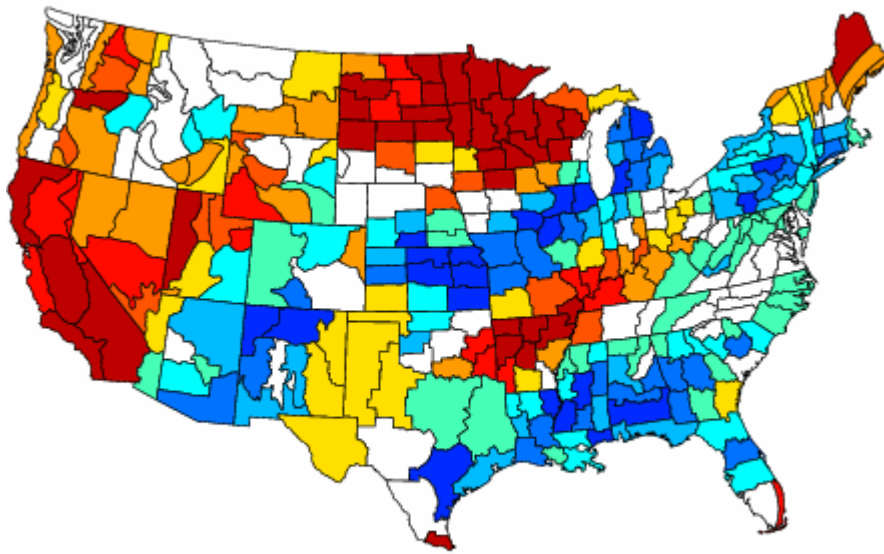
	Div 1	Div 2	Div 3	Div 4	Div 5	Div 6	Div 7	Div 8	Div 9	Div 10
Oct	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nov	0.7	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.1	0.1
Dec	4.9	1.6	0.2	15.4	0.4	4.4	1.8	2.4	6.5	6.5
Jan	27.8	16.2	11.9	17.4	12.3	24.7	17.7	12.3	13.3	13.3
Feb	13.1	17.2	9.6	5.4	11.7	10.9	12.3	8.1	9.0	9.0
Mar	22.0	10.4	6.0	2.6	10.2	22.7	10.3	11.7	16.6	16.6
April	0.0	0.0	0.0	0.0	0.0	1.3	1.9	1.2	3.9	3.9
May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Seasonal Total:</b>	<b>68.5</b>	<b>45.4</b>	<b>27.7</b>	<b>40.8</b>	<b>34.6</b>	<b>65.2</b>	<b>44.0</b>	<b>35.7</b>	<b>49.4</b>	<b>49.4</b>
<b>Seasonal Normal:</b>	<b>49.0</b>	<b>26.0</b>	<b>24.0</b>	<b>25.8</b>	<b>33.1</b>	<b>60.2</b>	<b>35.3</b>	<b>51.4</b>	<b>44.3</b>	<b>76.2</b>

Table 6: The seasonal divisional snowfall amounts as compared to the norm.

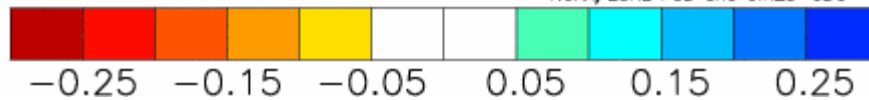
### Composite Standardized Precipitation Anomalies

Jan 1985, 1964, 1974, 1979, 2004, 1963, 1965

Versus 1895–2000 Longterm Average



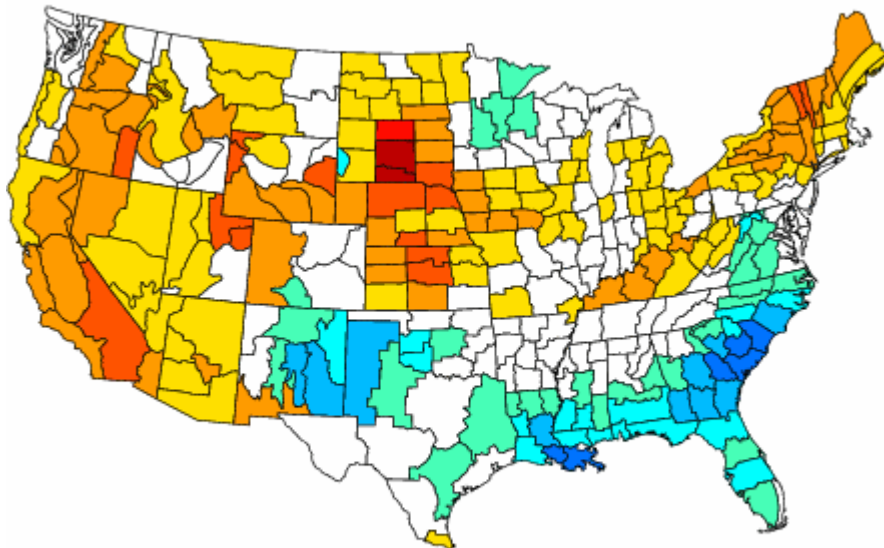
NOAA/ESRL PSD and CIRES-CDC



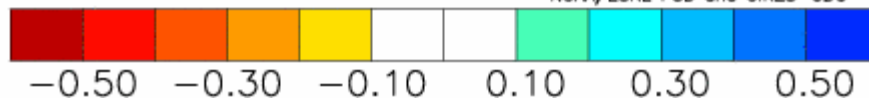
### Composite Standardized Precipitation Anomalies

Feb 1985, 1964, 1974, 1979, 2004, 1963, 1965

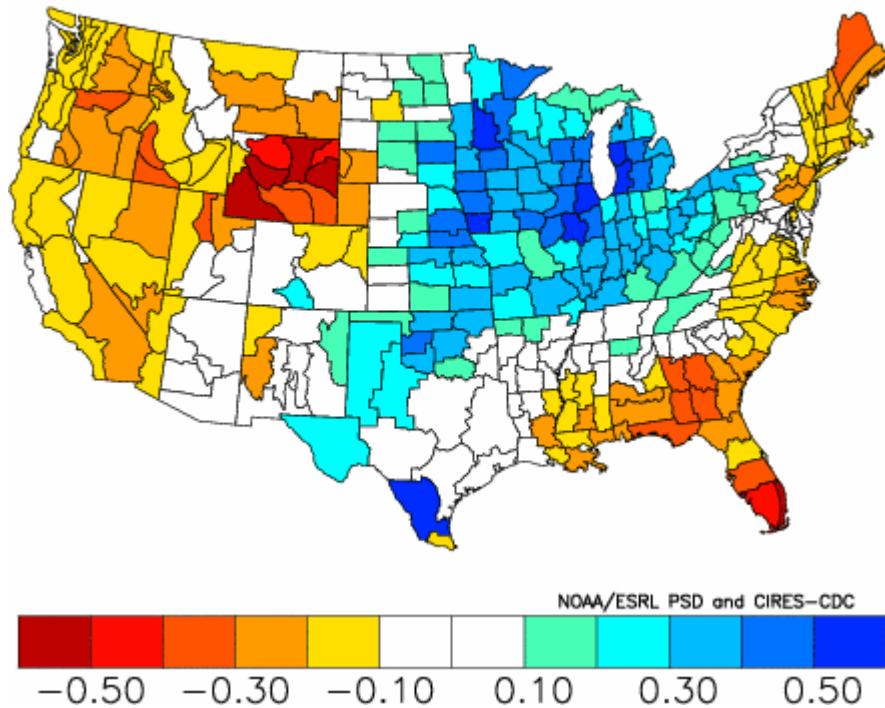
Versus 1895–2000 Longterm Average



NOAA/ESRL PSD and CIRES-CDC



Composite Standardized Precipitation Anomalies  
Mar 1985,1964,1974,1979,2004,1963,1965  
Versus 1895–2000 Longterm Average



For Pennsylvania, this analog forecast suggests a wet, snowy January with conditions drying out in February and lingering into March for the eastern half of the state. The tables above also suggest that there is a 75% chance that most climate divisions in Pennsylvania will see above average snowfall for this coming winter.



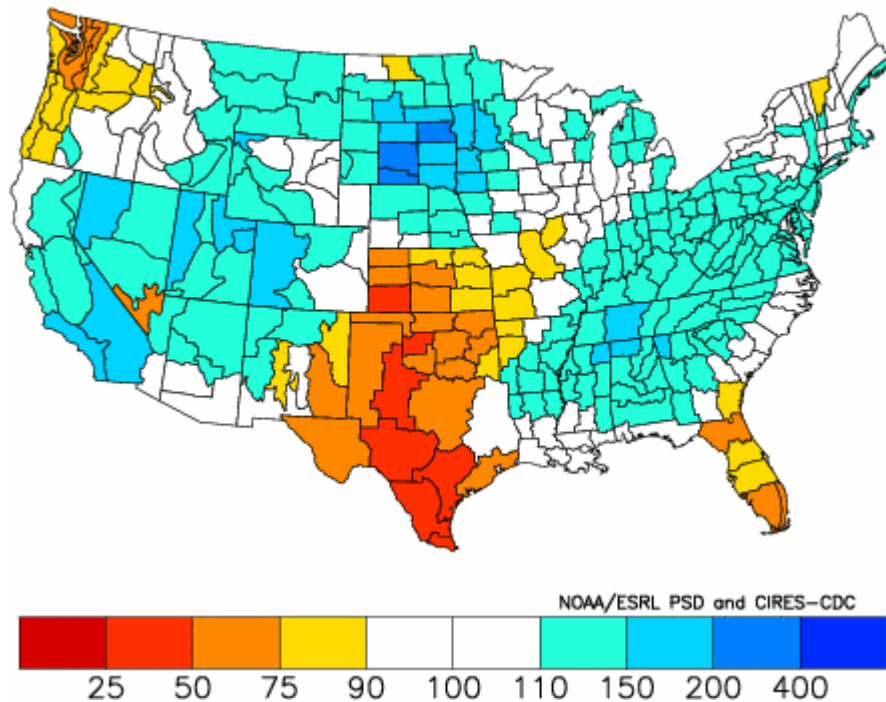
# Temperature and Precipitation Anomalies

Written by: Joshua Boden

In order to best describe the commonality of the scenarios, “Percent of Normal” for precipitation and “Average Anomaly” for temperature were graphed. Analog years: 1951-1952 and 1961-1962 were found to match all three of the criteria. However, because two years would not pose such a great forecast, analog years were chosen in which two of the three criteria were met. These were also plotted using the same parameters as before. Similar correlations between the 3 year and 2+ year maps were shown, with the southeast and southern plains forecasted to have a warm winter and areas of the north plains and northeastern Rockies to see cooler than average temperatures. Almost the entire northern half of the country are likely to see some above average precipitation, while the south central United States may be drier than normal.

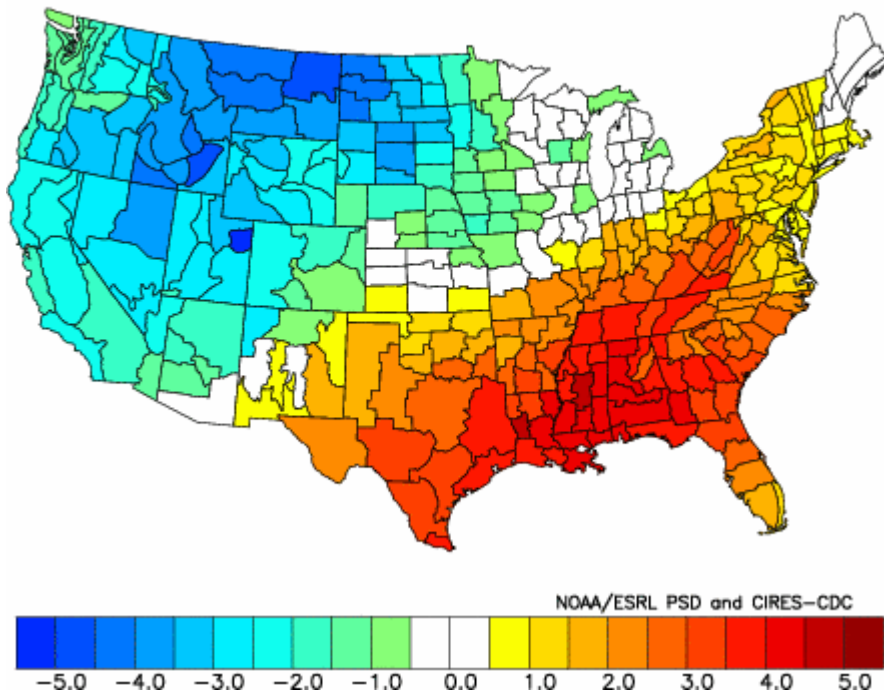
## All 3 years satisfy criteria

Composite Percent of Normal Precipitation 1950–2007  
Dec to Feb 1951–52, 1961–62



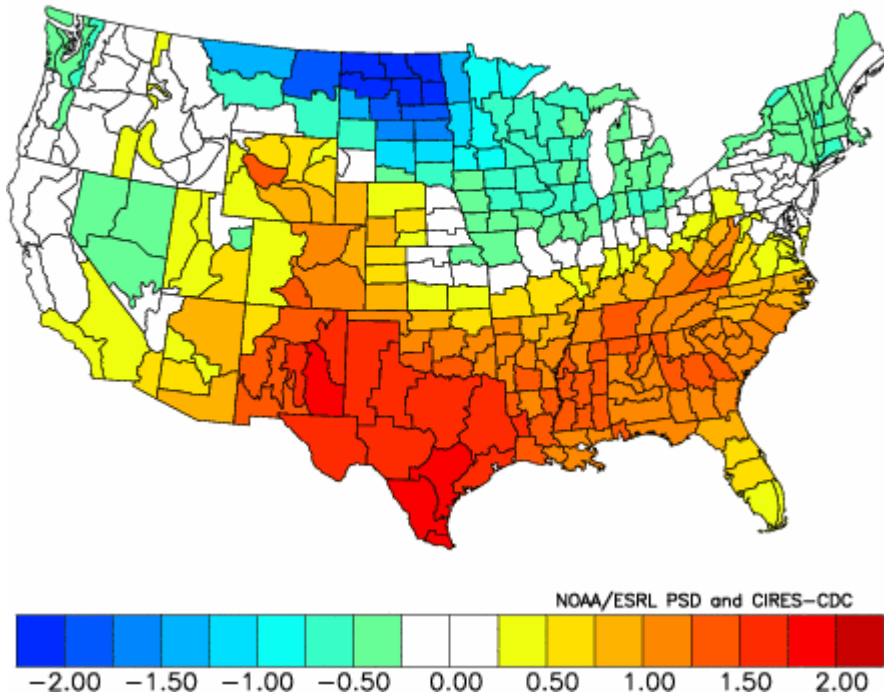
### All 3 years satisfy criteria

Composite Temperature Anomalies (F)  
Dec to Feb 1951-52, 1961-62  
Versus 1950-1995 Longterm Average



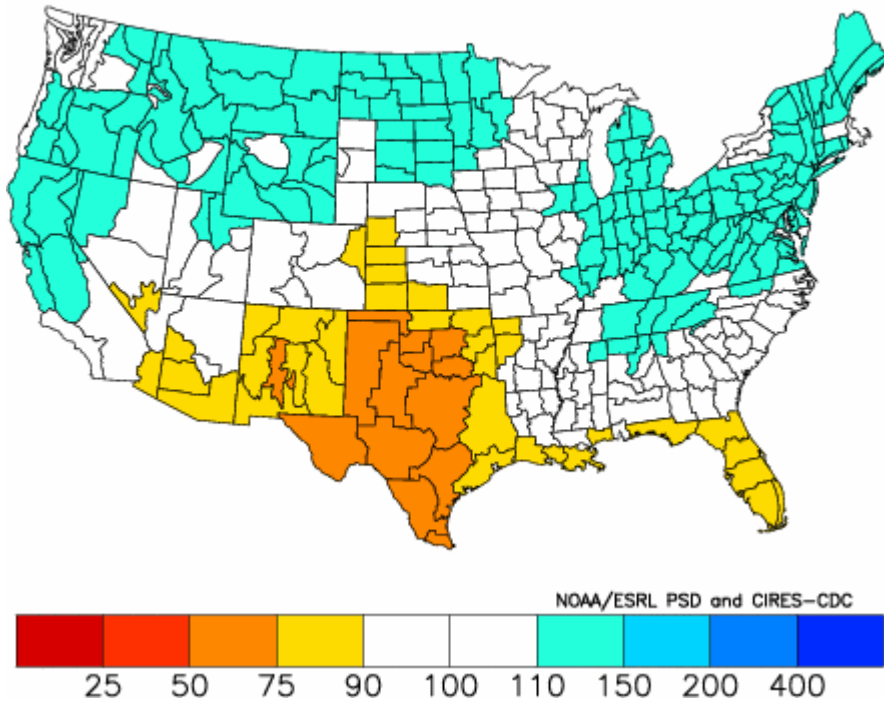
### Years which 2 or more criteria were satisfied

Composite Temperature Anomalies (F)  
Versus 1895-2000 Longterm Average  
Dec to Feb 1998-99, 1973-74, 1961-62, 1951-52, 1942-43, 1927-28, 1908-09, 1906-07,  
1903-04, 1902-03, 1901-02,



## Years which 2 or more criteria were satisfied

Composite Percent of Normal Precipitation 1895–2000  
Dec to Feb 1998–99, 1973–74, 1961–62, 1951–52, 1942–43, 1927–28, 1908–09, 1906–07  
1903–04, 1902–03, 1901–02



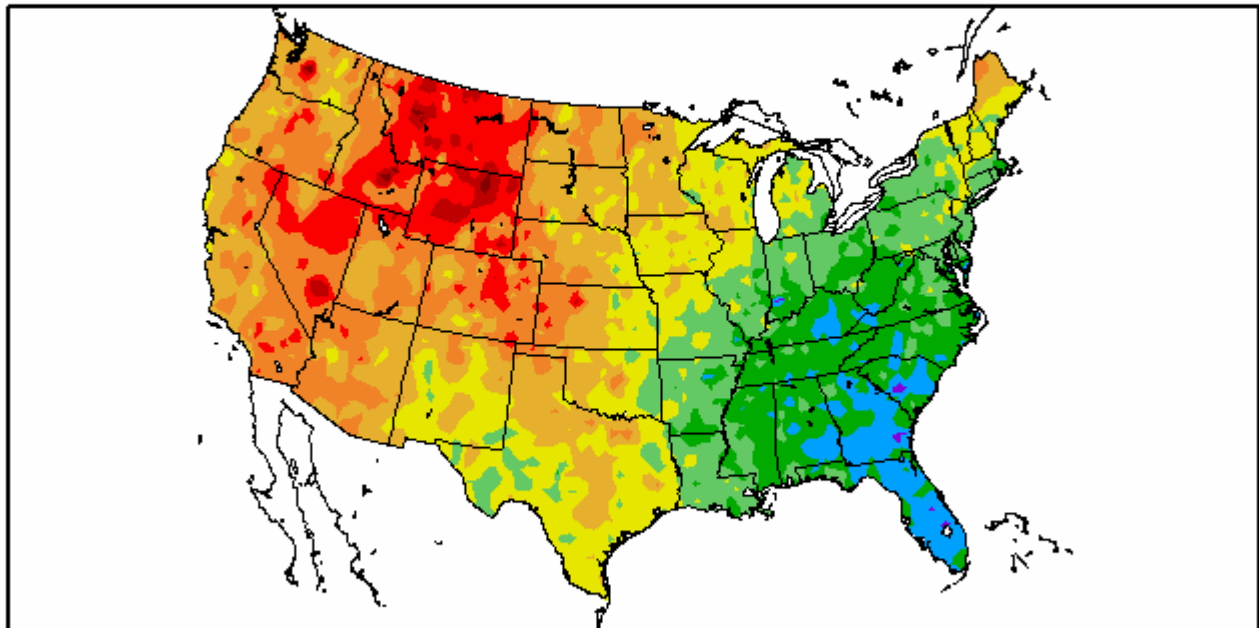
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## Outlook

Experimental Long Range Outlook for Pennsylvania: December 2008 – January 2009

Departure from Normal Temperature (F)  
11/1/2008 – 11/30/2008



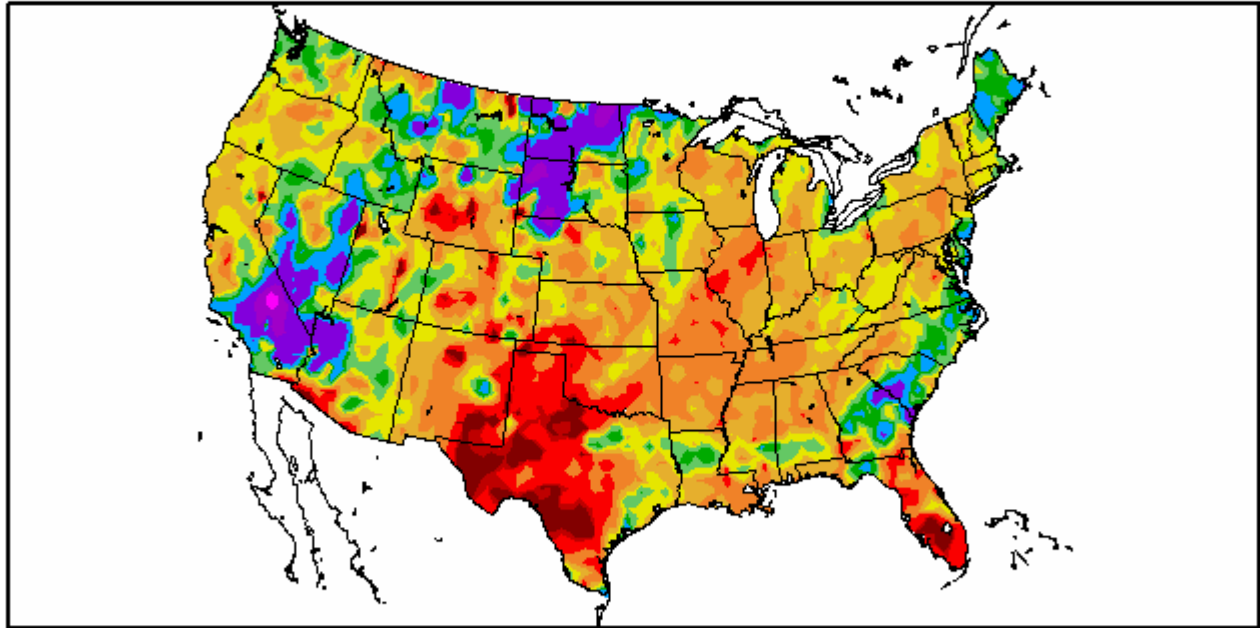
Generated 12/1/2008 at HPRCC using provisional data.

NOAA Regional Climate Centers

Much of the southeastern United States remained on the chilly side during the month of November. In contrast, states in the northwestern tier such as Montana and Wyoming experienced above average temperatures. A deep upper level trough dominated the eastern half of the United States throughout November, causing temperatures to fall below the average mark for the month.

# Percent of Normal Precipitation (%)

## 11/1/2008 - 11/30/2008



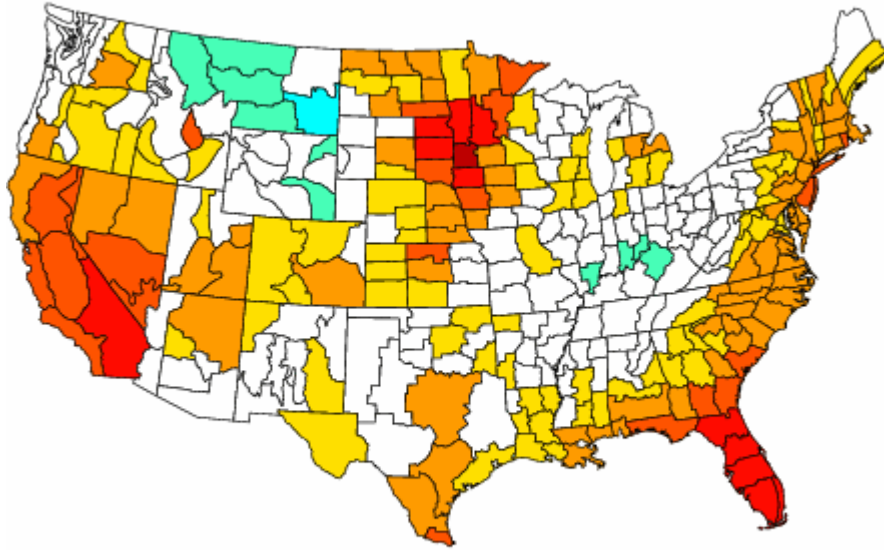
Generated 12/1/2008 at HPRCC using provisional data.

NOAA Regional Climate Centers

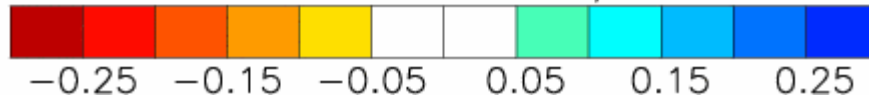
Rainfall was well below average across much of the country, with exceptions in southern California, the southeastern coastal states, and the Dakotas. The above average precipitation in the Dakotas is largely due to the blizzard that struck the area in early November.

### Composite Standardized Precipitation Anomalies Versus 1895–2000 Longterm Average

Dec to Jan 1917–18, 1962–63, 1932–33, 1904–05, 1949–50, 1954–55, 1970–71, 1939–40  
1944–45, 1923–24,

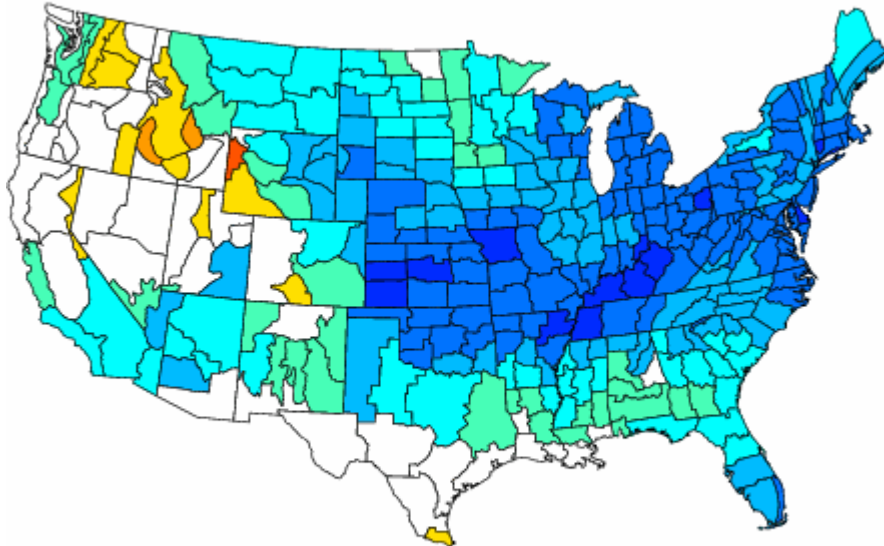


NOAA/ESRL PSD and CIRES–CDC

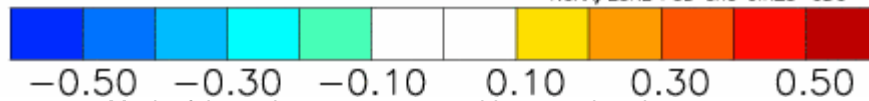


### Composite Standardized Temperature Anomalies Versus 1895–2000 Longterm Average

Dec to Jan 1917–18, 1962–63, 1932–33, 1904–05, 1949–50, 1954–55, 1970–71, 1939–40  
1944–45, 1923–24,

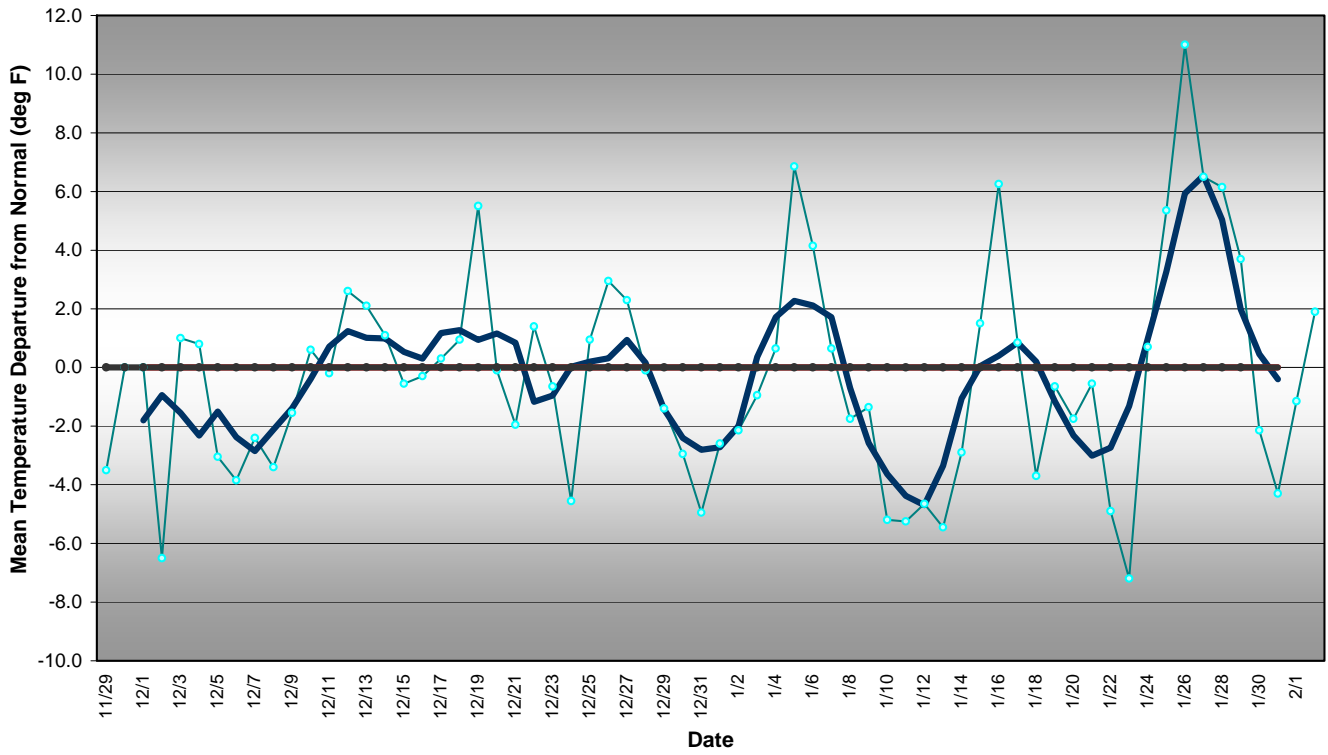


NOAA/ESRL PSD and CIRES–CDC

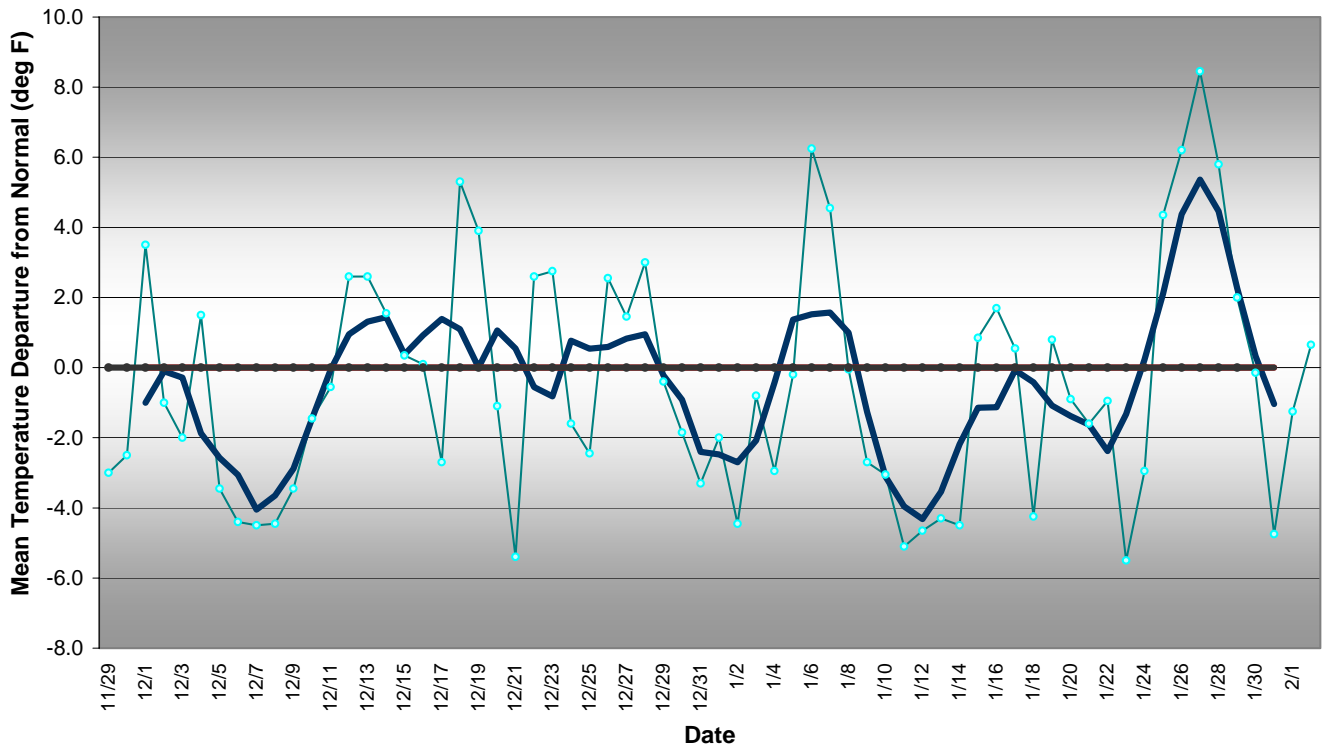


Much of the nation can expect a cold start to the winter season.

### Western Pennsylvania Temperature Forecast December 2008 - January 2009



### Central Pennsylvania Temperature Forecast December 2008 - January 2009





### Eastern Pennsylvania Temperature Forecast December 2008 - January 2009

