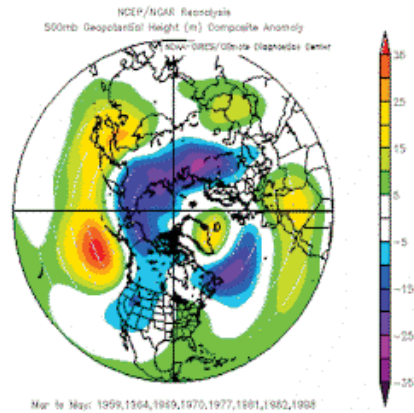


The Pennsylvania Observer

The Pennsylvania State Climatologist



FEATURED CLIMATE HIGHLIGHT

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This month's climate highlight focuses on the El Nino Southern Oscillation (ENSO) and the average temperature in Pennsylvania for June and July. The study analyzes these variables and looks for a correlation with October surface temperatures in the state. The June and July of 2009 was the coldest on record at 66.1F (18.9C)

First, the 20 years with the coldest combined June and July temperatures were listed. Table 1 shows this list.

Year	Jun-Jul Avg Temp (F)
2009	66.1
1985	66.15
1992	66.35
1972	66.5
1965	66.65
1982	66.7
1974	66.8
1979	66.8
2003	66.9
1960	66.95
1950	67
1978	67
2004	67
1958	67.1
1980	67.2
2000	67.4
1984	67.5
2001	67.5
1977	67.55
1962	67.85

Table 1: 20 coldest combined Jun-Jul after 1950. Temperature in degrees Fahrenheit.

A weak El Nino developed in the Pacific Ocean this summer. Basically, an El Nino occurs when waters in the eastern Pacific (mainly off of the coast of South America) are anomalously warm. Conversely, La Nina happens when the waters are cooler than normal. This summer, El Nino 3.4 was close to 0.5. Therefore, of the 20 years in Table 1, years with an El Nino between 0.3 and 0.7 were chosen (leaving out any years without this criterion). Table 2 displays those years.

Year	Jun-Jul Avg Temp (F)
1992	66.35
1972	66.5
1965	66.65
1982	66.7
2003	66.9
2004	67
1958	67.1
1980	67.2
1977	67.55

Table 2: Coldest June and July temperatures AND El Nino 3.4 between 0.3 and 0.7.

These nine (9) years were then analyzed to see the average October temperature in Pennsylvania. The image below shows the entire United States temperature anomaly for the month of October averaged over the above years.

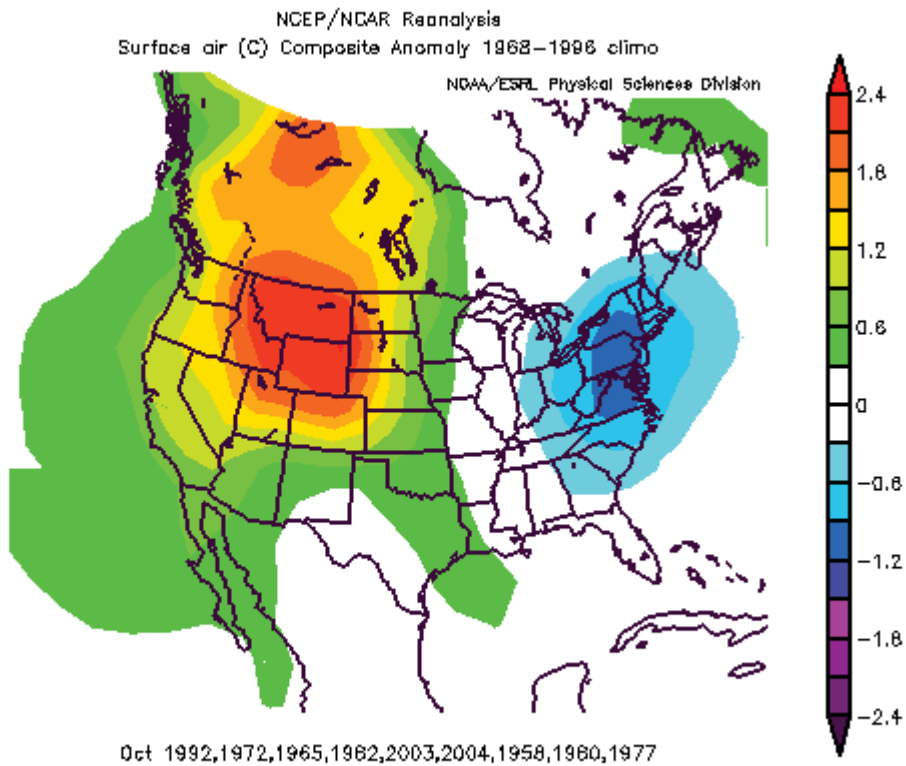


Image 1: October temperature anomaly averaged over the years in Table 2. Courtesy of the Climatic Data Center (CDC)

The table below (Table 3) lists the average October temperature in Pennsylvania for the nine (9) years in Table 2.

Year	October Avg Temp (F)
1992	47.1
1972	48.6
1965	48.6
1982	51.2
2003	48.0
2004	50.2
1958	50.4
1980	47.5
1977	48.7
<i>9 Yr Avg</i>	<i>48.7</i>
<i>1895-2008 Avg</i>	<i>51.136</i>
<i>9 Yr Departure</i>	<i>-2.616</i>

Table 3: Lists average October temperature for the nine (9) years listed in Table 2. Shows average of the 9 years. Shows long term average and computes the departure from average of the nine years being analyzed.

From Table 3, we can see that years with a below normal June and July along with a slight El Nino lead to a below normal October. Not one year of the nine (9) is above average! The departure is 2.616F (1.45C) below average. From just looking at temperatures in Pennsylvania and the ENSO, October has a good shot at being cooler than normal.