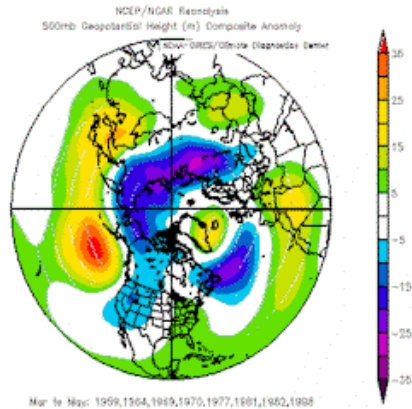


The Pennsylvania Observer

The Pennsylvania State Climatologist



November Climate Highlight:

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November's climate highlight predicts the snowfall for the upcoming winter by comparing the snowfall of the analog years in which the Nino 3.4 region had values between 0 and -0.5 from November through January and the North Atlantic Oscillation (NAO) value was negative for those same months.

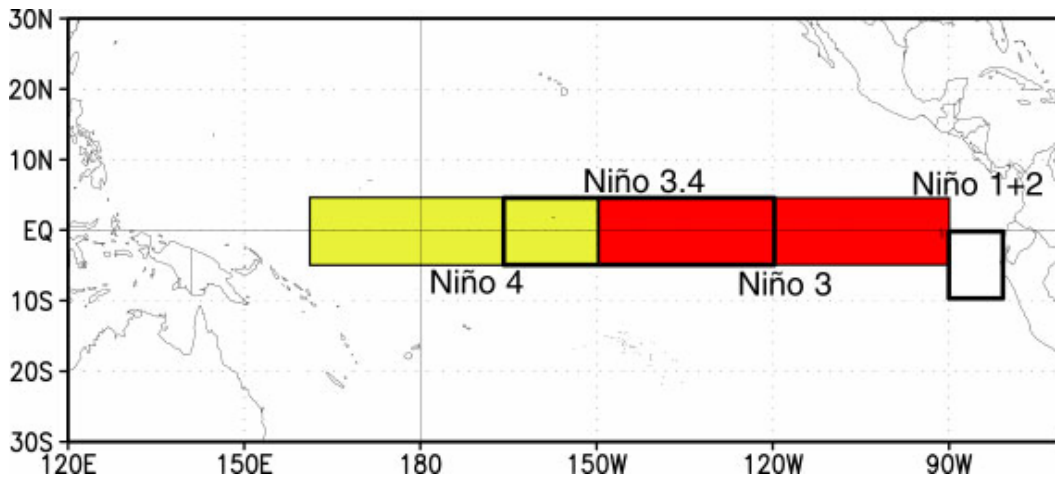


Figure 1: The location of the Niño 3.4 region

When the sea surface temperature anomalies in the Niño 3.4 region are greater than or equal to 0.5°C , there is a good chance of an El Niño event taking place. When the anomalies are smaller than or equal to -0.5°C , there is a good chance of a La Niña event taking place.

La Niña is characterized by unusually cold ocean temperatures in the eastern equatorial Pacific. This phase is characterized by warm winters in the southeastern United States, colder than normal winters from the Pacific Northwest to the Great Lakes, and unsettled winters in the Northeast and Mid-Atlantic states.

When the NAO is negative, the East coast of the United States experiences more cold air outbreaks and hence snowy weather conditions.

The years in which the Niño 3.4 region had values between 0 and -0.5 and the NOA was negative are: **1961-1962, 1962-1963, 1996-1997.**

Yearly Snowfall	1	2	3	4	5	6	7	8	9	10
1961-62	40.8	32.8	30	47.8	37.4	41.9	47.2	53	42.2	56.4
1962-63	70.8	42.5	27.1	44.1	47.1	64.1	60.9	55.6	55	80.8
1996-97	32	44.9	11.7	21.9	21.3	56.5	36.9	33.6	18.4	60.5
Average (Nov-Mar)	45.7	29	23.3	28.7	32.4	56.1	42.5	49.8	42.7	72.9

Table 1: Shows statistics of the amount of snowfall during the analog years for the 10 climate divisions in Pennsylvania

Division 1	Nov	Dec	Jan	Feb	Mar	Total
1961-62	3.6	12.1	2.5	17.7	4.9	40.8
1962-63	7	19.2	13.9	20	10.7	70.8
1996-97	0.4	6.8	8.9	7.8	8.1	32
Division 2	Nov	Dec	Jan	Feb	Mar	Total
1961-62	2.2	11	1.2	14.3	4.1	32.8
1962-63	1.7	15.1	9.6	11.4	4.7	42.5
1996-97	5.8	17.8	5.5	6.3	9.5	44.9
Division 3	Nov	Dec	Jan	Feb	Mar	Total
1961-62	2.9	7.4	0.8	12.3	6.6	30
1962-63	1	11	6.4	7.6	1.1	27.1
1996-97	0.1	0.9	1.8	4.5	4.4	11.7
Division 4	Nov	Dec	Jan	Feb	Mar	Total
1961-62	3.2	12.1	1.9	14.8	15.8	47.8
1962-63	2.9	15.1	7.2	13.5	5.4	44.1
1996-97	0.3	4.7	5	8.2	3.7	21.9
Division 5	Nov	Dec	Jan	Feb	Mar	Total
1961-62	2.1	13.5	3	11.9	6.9	37.4
1962-63	2.5	16.4	9.3	12.2	6.7	47.1
1996-97	0.5	2.1	8	6.9	3.8	21.3
Division 6	Nov	Dec	Jan	Feb	Mar	Total
1961-62	4.4	8.8	5.3	16.2	7.2	41.9
1962-63	5.3	17.2	14.2	13.6	13.8	64.1
1996-97	5.2	20.2	14	9.7	7.4	56.5
Division 7	Nov	Dec	Jan	Feb	Mar	Total
1961-62	2.9	7.2	5.9	13.5	17.7	47.2
1962-63	1.5	20.8	10.8	16.4	11.4	60.9
1996-97	1.1	4.5	14.7	11.6	5	36.9
Division 8	Nov	Dec	Jan	Feb	Mar	Total
1961-62	2	10.9	4.5	14.7	20.9	53
1962-63	1.6	19.3	6.9	16.8	11	55.6
1996-97	3.4	8.7	10.5	7.2	3.8	33.6
Division 9	Nov	Dec	Jan	Feb	Mar	Total
1961-62	1.9	7.1	6	10.6	16.6	42.2
1962-63	0.4	19	12	18	5.6	55
1996-97	2.6	6	2.7	5.8	1.3	18.4
Division 10	Nov	Dec	Jan	Feb	Mar	Total
1961-62	6.5	14	8.1	18.3	9.5	56.4
1962-63	1.1	30.8	15.2	19.6	14.1	80.8
1996-97	13.3	9.4	18.6	11.3	7.9	60.5

Table 2: This table shows the amount of snowfall that fell each month during the analog years for the 10 climate divisions.

Composite Temperature Anomalies (F)
Nov to Mar 1961-62, 1962-63, 1996-97
Versus 1950-1995 Longterm Average

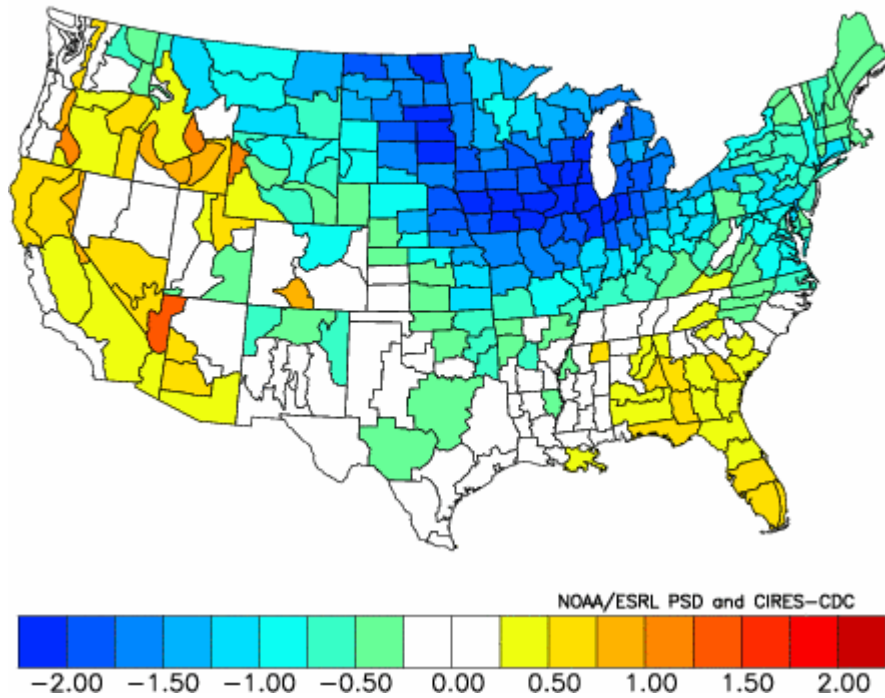


Figure 2: This figure shows the temperatures for November through March when both the Nino 3.4 region and NAO were negative.

Composite Percent of Normal Precipitation 1950-1995
Nov to Mar 1961-62, 1962-63, 1996-97

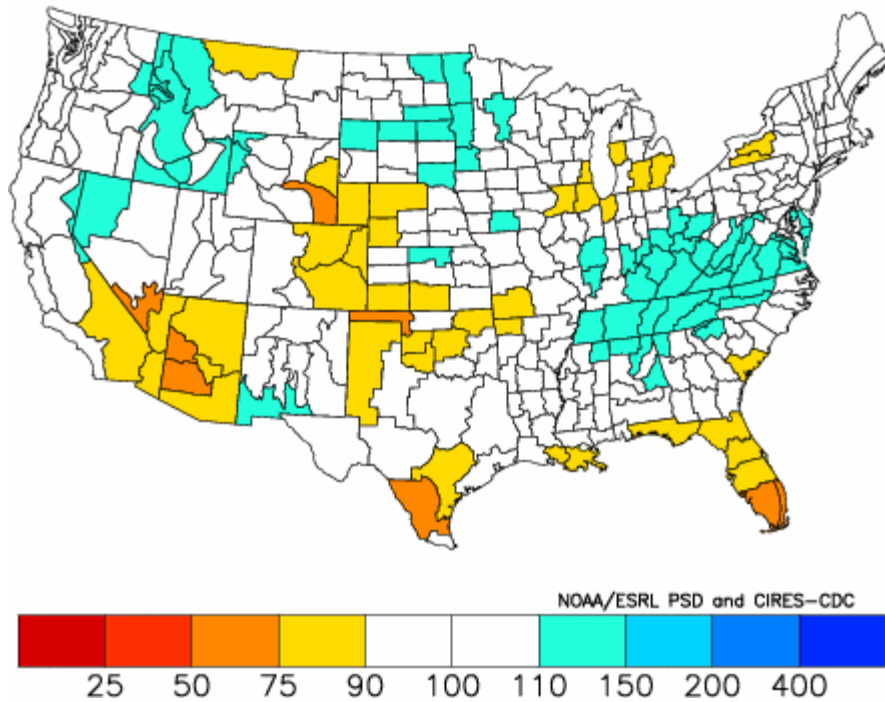


Figure 3: This figure shows the precipitation amounts for November through March when both the Nino 3.4 region and NAO were negative.