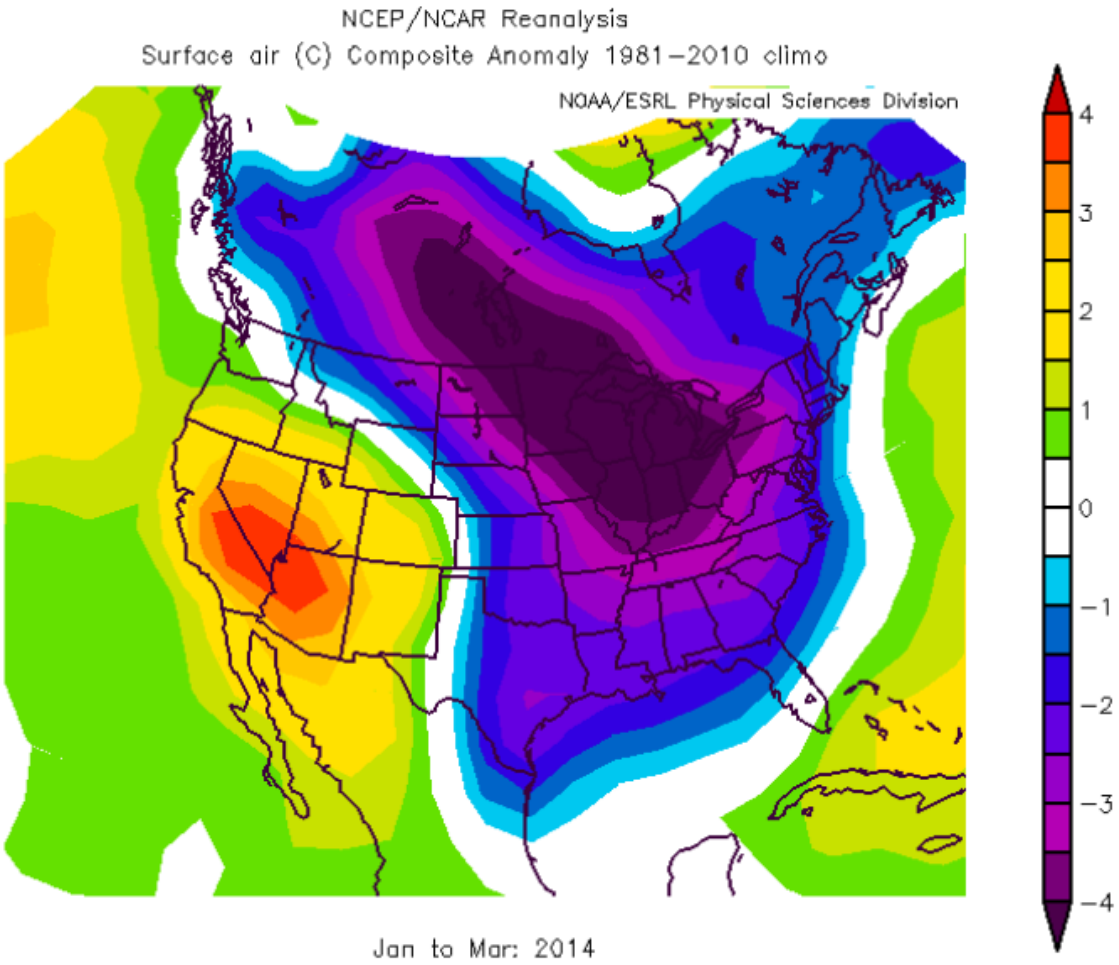
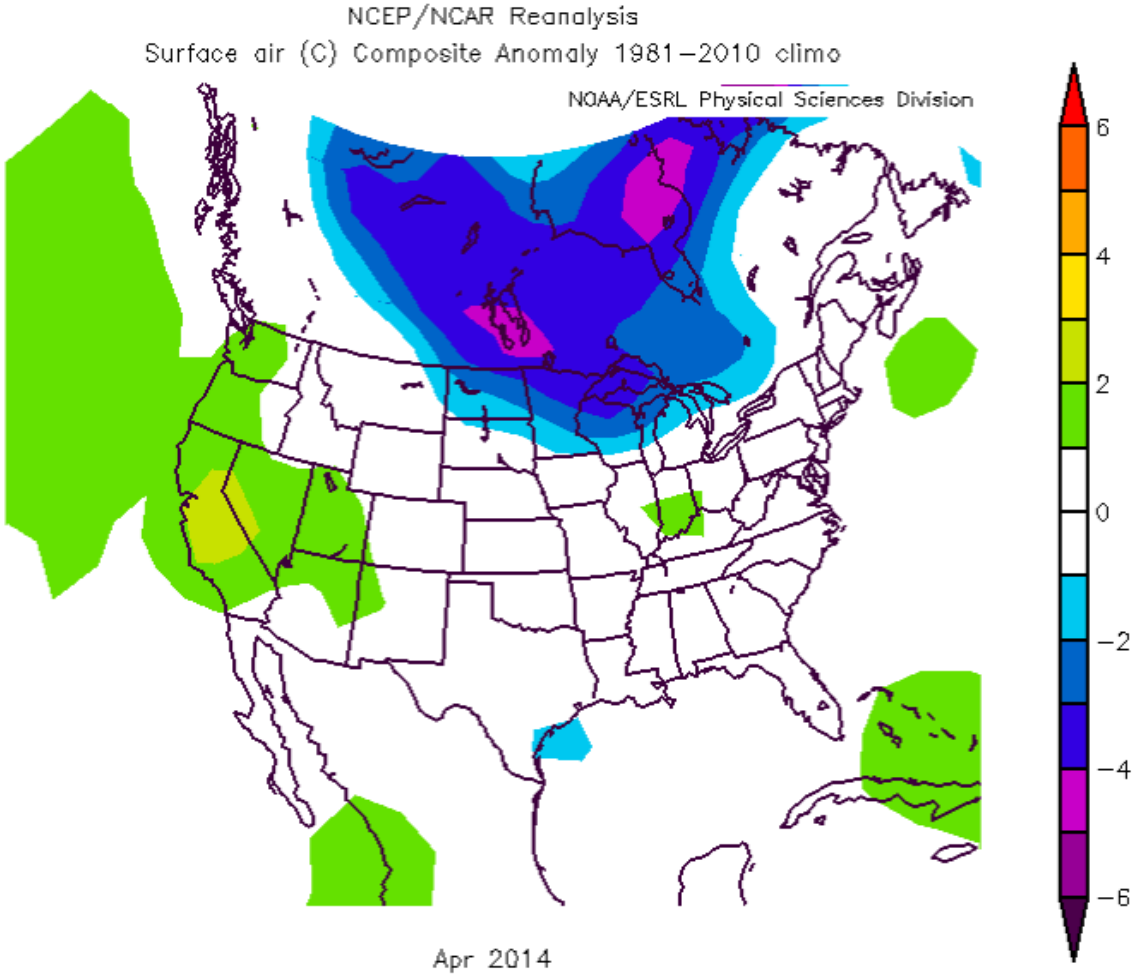
FEATURED CLIMATE HIGHLIGHT

By: Arthur Person

Many people are remembering the winter of 2013-2014 as a long, cold, snowy one for Pennsylvania, and for good reason. Snowfalls started by Thanksgiving and cold weather persisted through March. Snowfall and cold temperature records were broken on several dates. The first three months of the year were persistently below normal by an average of 5 degrees Fahrenheit, ranking 6th coldest on record. Although April crept slightly above normal, the same cold vortex in eastern Canada still persisted driving a pattern of cooler temperatures from the north-central states and Great Lakes region southeastward across the eastern U.S.





Given the intensity and persistence of this winter pattern, it is interesting to consider whether other years that started out cold are indicative of certain weather outcomes for the coming summer. To consider this, the 19 coldest years for the period January through April for Pennsylvania were selected from 119 years of climate records. For each of those historical years, the average temperature and precipitation recorded for July and August for Pennsylvania were tabulated and categorized into below and above normal categories. For average temperature, the tally of those historical years is:

Average Temperature

Number of Years	MBN	BN	AN	MAN
July + August	6	7	5	1

MBN = Much Below Normal (> 1 standard deviation)
BN = Below Normal (0-1 standard deviation)
AN = Above Normal (0-1 standard deviation)
MAN = Much Above Normal (> 1 standard deviation)

For the 19 coldest January-Aprils, there appears to be a tendency for July and August of the subsequent summer to be colder than normal. Thirteen of the 19 coldest years, or 68%, were below normal. There is also a tendency for those colder summers to be more extreme with 6 of the 19 much below normal compared to only one year that was much above normal. If the subsequent summer turns out to be cold, it was much below normal 6/13 (46%) of the time.

For precipitation in Pennsylvania, the historical years tally is:

Precipitation

Number of Years	MBN	BN	AN	MAN
July + August	2	6	8	3

In this case, the outcome appears less distinct with a slight tendency for above normal precipitation (11/19 or 58% of years) for July and August when the first four months of the year are very cold.

The number of sample years for the above study is too small to draw statistically significant conclusions regarding these tendencies. Using the above sample, however, we can say that cooler than normal summers resulted by a ratio of about 2-to-1 when the first four months of the year were much below normal, while precipitation was distributed about equally above or below normal.