

Meteorological Winter (December through February), 2012/2013 Conditional Temperature Forecast for
Philadelphia International Airport (PHL)
in degrees Fahrenheit

If the cold snap starts between	The forecast mean winter temperature is:	67% confidence interval is:	90% confidence interval is:
December 1 - 15	33.2	31.1 – 35.4	29.6 – 36.9
December 16 - 31	34.0	31.8 – 36.2	30.3 – 37.6
January 1 - 15	34.8	32.6 – 36.9	31.1 – 38.4
January 16 - 31	35.5	33.4 – 37.7	31.9 – 39.2
February 1 - 14	36.3	34.1 – 38.4	32.6 – 39.9
February 15 - 28	37.0	34.8 – 39.1	33.3 – 40.6
No cold snap	38.9	36.7 – 41.0	35.2 – 42.5

The normal winter temperature at PHL is 35.4 degrees.

The above conditional forecast is from a multiple linear regression equation that was derived from data from 1950/51 through 2011/12 that came from PHL. It was found that the combination of the extended Julian date (beyond 365 or 366 after December 31) of the first cold snap of the season, the October mean minimum temperature and the November mean maximum temperature explained approximately 51 percent of the variance in mean winter temperature.

The technique results in a specific forecast value and associated confidence intervals. So, if the first cold snap of the season begins on December 24, the forecast of the mean winter temperature is 34.0 degrees; there is a 67% chance that the mean winter temperature will fall between 31.8 and 36.2 degrees, and there is a 90% chance that the mean winter temperature will fall between 30.3 and 37.6 degrees.

For purposes of this forecast, a cold snap is defined as at least three consecutive days when the temperature does not exceed 35 degrees.

This study has looked at 62 winters, over which there have been six when no cold snap occurred. Based on that, the likelihood of no cold snap occurring during the upcoming winter is approximately 10%. However, five of those six winters have occurred over the last 22. Based on that, the likelihood of no cold snap occurring during the upcoming winter is approximately 23%.

Of the 56 winters that did experience at least one cold snap, the mean date of the first cold snap was December 29.