



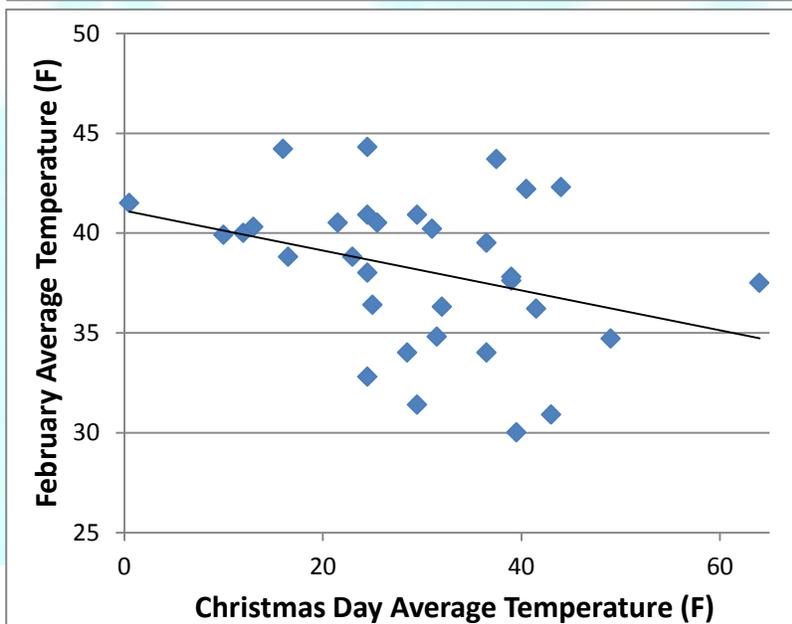
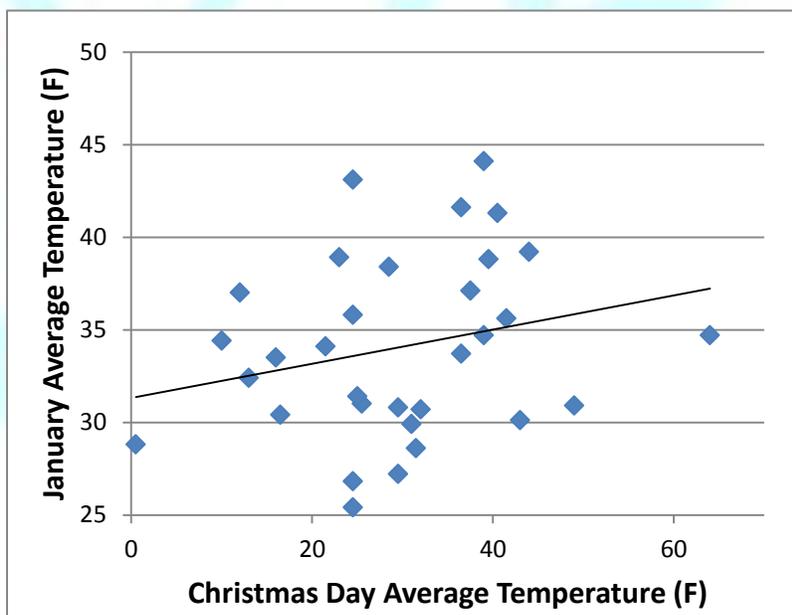
Does the Weather on Christmas Day Tell Anything About What to Expect the Rest of Winter?

Christmas is quickly approaching, which means that cooler temperatures are rapidly settling into the Ohio Valley. Many people across the Ohio Valley hope for cold and snow on Christmas Day, which really help to set the holiday mood. Some urban legends claim that the weather on Christmas dictates what the weather will be the rest of winter. Can one day of weather really help predict what the whole rest of winter will bring? Let's find out!

(Note: All data below is from the Louisville International Airport – SDF)

Temperature: The chart below looks at Christmases and winters of the last 30 years. The second column lists the average temperature on Christmas Day for each year. The third column displays the average temperature through the following month of January, and how far above/below normal it was. The fourth column is the same as the third, but for the month of February. **Red** means that the temperature was above the 30-year average, while **blue** means it was below the average (*Graph explanations on the next page*).

Winter Year	Christmas Day Average Temperature	January Average Temperature/Departure from Average (1983-2012)	February Average Temperature/Departure from Average (1983-2012)
2011-2012	44.0	39.2 +5.1	42.3 +4.4
2010-2011	29.5	30.8 -3.3	40.9 +3.0
2009-2010	43.0	30.1 -4.0	30.9 -7.0
2008-2009	31.0	29.9 -4.2	40.2 +2.3
2007-2008	39.0	34.7 +0.6	37.6 -0.3
2006-2007	39.5	38.8 +4.7	30.0 -7.9
2005-2006	39.0	44.1 +10.0	37.8 -0.1
2004-2005	12.0	37.0 +2.9	40.0 +2.1
2003-2004	32.0	30.7 -3.4	36.3 -1.6
2002-2003	29.5	27.2 -6.9	31.4 -6.8
2001-2002	23.0	38.9 +4.7	38.8 +0.9
2000-2001	13.0	32.4 -1.7	40.3 +2.4
1999-2000	16.0	33.5 -0.6	44.2 +6.3
1998-1999	24.5	35.8 +1.7	40.9 +3.0
1997-1998	40.5	41.3 +7.2	42.2 +4.3
1996-1997	25.5	31.0 -4.1	40.5 +2.6
1995-1996	25.0	31.4 -2.7	36.4 -1.5
1994-1995	41.5	35.6 +1.5	36.2 -1.7
1993-1994	24.5	26.8 -7.3	38.0 +0.1
1992-1993	28.5	38.4 +4.3	34.0 -3.9
1991-1992	37.5	37.1 +3.0	43.7 +5.8
1990-1991	21.5	34.1 0.0	40.5 +2.6
1989-1990	24.5	43.1 +9.0	44.3 +6.4
1988-1989	36.5	41.6 +7.5	34.0 -3.9
1987-1988	49.0	30.9 -3.2	34.7 -3.2
1986-1987	36.5	33.7 -0.4	39.5 +1.6
1985-1986	10.0	34.4 +0.3	39.9 +2.0
1984-1985	24.5	25.4 -8.7	32.8 -5.1
1983-1984	0.5	28.8 -5.3	41.5 +2.6
1982-1983	64.0	34.7 +0.6	37.5 -0.4





The table above shows that of the 12 Christmases that had temperatures above average, 9 (75%) of the following Januarys went on to be above average. Of the 18 Christmases below average, 11 (61%) of the following Januarys were below average.

The charts above graphically display January and February temperatures as a function of the temperature on Christmas Day. Interestingly, there is some small correlation in Christmas to January temperatures. As Christmas Day temperatures increase, the graph shows a trend for the January temperatures to increase. In fact, the correlation coefficient (a mathematical way to quantify the relationship, with a value of 1 being a perfect correlation) is 0.24, which shows at least some relationship exists, especially considering this is an environmental variable. Of perhaps even more interest, is the February graph! As Christmas temperatures increase, the temperatures in February tend to decrease. Shockingly, this relationship is even better than in January with a correlation coefficient of -0.33! This stat is rather remarkable, as one would normally think the further away from Christmas you get, the less of a relationship you'd see in the temperatures. Additionally, it is rather astounding that it is an inverse relationship, which may hint that if winter sets in early (cold Christmas) it tends to end earlier (warm February).

Snowfall: Since Louisville sits at a rather low latitude, having snow on the ground Christmas morning is not all that common. In fact, only 12 of the last 30 years have had snow (trace or more) on the ground. So does snow on the ground Christmas morning correspond to a snowy remainder of the winter? Not necessarily. The chart below explains the details. The second column lists the snow depth on each of the Christmases where there was at least a trace. The third and fourth columns are the following January's and February's average snowfall and the departure from average. Again, **red** indicates above average snowfall, and **blue** is below average.

Winter Year	Christmas Morning Snow Depth	January Snowfall/ Departure from Average (1983-2012)	February Snowfall/ Departure from Average (1983-2012)
2010-2011	1	10.0 +5.2	1.1 -3.5
2004-2005	5	2.5 -1.7	1.2 -3.4
2002-2003	T	5.3 +1.1	10.7 +6.1
2000-2001	1	4.8 +0.6	0.4 -4.2
1999-2000	3	5.8 +1.6	0.1 -4.5
1996-1997	T	2.7 -1.5	2.3 -2.3
1995-1996	T	15.5 +11.3	2.7 -1.9
1993-1994	T	17.7 +13.5	1.5 -3.1
1990-1991	T	0.3 -3.9	1.5 -3.1
1989-1990	2	1.9 -2.3	0.8 -3.8
1985-1986	T	1.1 -3.1	8.8 +4.2
1983-1984	T	3.1 -1.1	8.8 +4.2

Of the 12 Christmases with snow on the ground, only 6 went on to have above normal snowfall in January, and only 3 had above average snowfall in February. Therefore, it does not look like there is as much correlation with Christmas snowfall to the rest of winter snowfall as there is Christmas temperatures to the rest of winter temperatures.

Regardless of what Mother Nature brings us this Christmas, the National Weather Service in Louisville would like to wish everyone a safe and merry Christmas!