

Winter 2012-2013 Forecast for Southwest Lower Michigan

By William Marino

The Temperature forecast for Southwest Lower Michigan for the winter of 2012-2013 (Figure 1) is calls for an equal chance (33%) for it to be above, near or below normal. The precipitation forecast (Figure 2) is for an equal chance (33%) for it to be above, near or below normal. The snowfall forecast is also for an equal chance (33%) for it to be above, near or below normal.

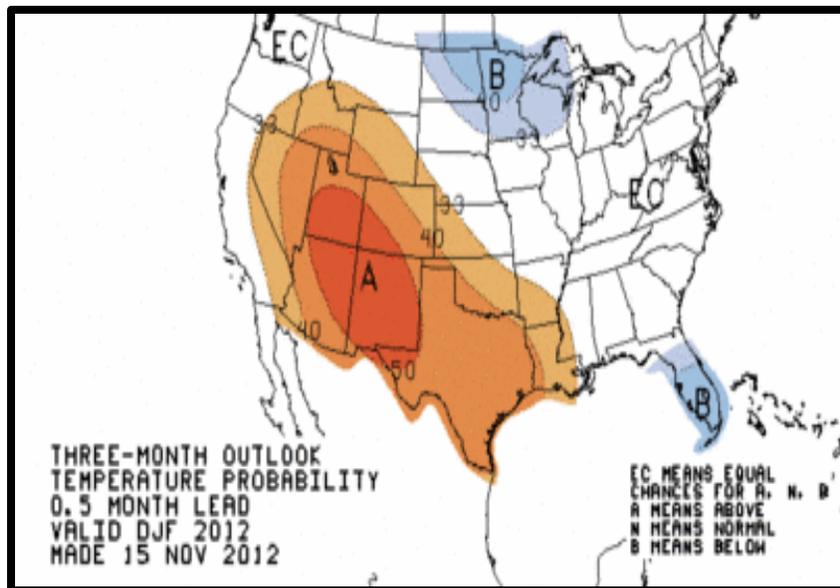


Figure 1. The CPC three month outlooks for temperature probabilities.

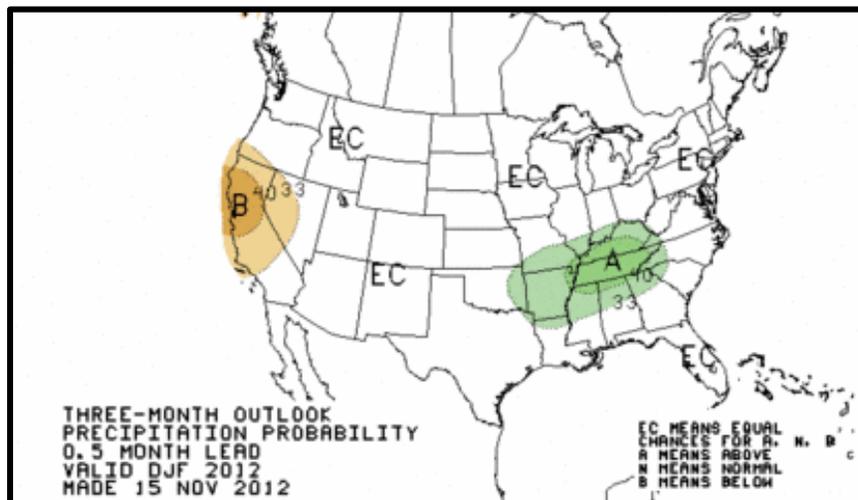


Figure 2. The CPC three month outlooks for precipitation probabilities.

This forecast is based on the forecast for ENSO (El Niño Southern Oscillation) to be in the neutral phase. This means conditions are expected to be near normal with neither an El Niño nor a La Niña expected. Also considered were numerous dynamical and statistical computer models. The trend in the winter temperature (figure not shown) was also considered. The trend over the past 10 winters over Southwest Lower Michigan was near neutral (neither warming nor cooling has occurred).

Below (Figure 3) is the typical set up for the position of the polar jet stream during the 14 cases between 1961 and 2000 when ENSO was neutral. With the polar jet stream in the position shown in the diagram, it can be seen that Southwest Michigan would be on the edge of both the polar air and the more temperate air stream that comes from the eastern Pacific. As a result I would expect the cold spells and warm spells to be more extreme than we have had during the past two winters. The upcoming winter would be more like the winters of 2004/2005 and 2008/2009, when we had about two weeks of warmer than normal temperatures then two weeks of colder than normal conditions. The total number of above normal days was about equal to the total number of below normal days in both of those winters. It would be unlike the last two winters; during the winter of 2011/2012 temperatures were mostly above normal, during the winter of 2010/2011 the daily temperatures were mostly near to below normal.

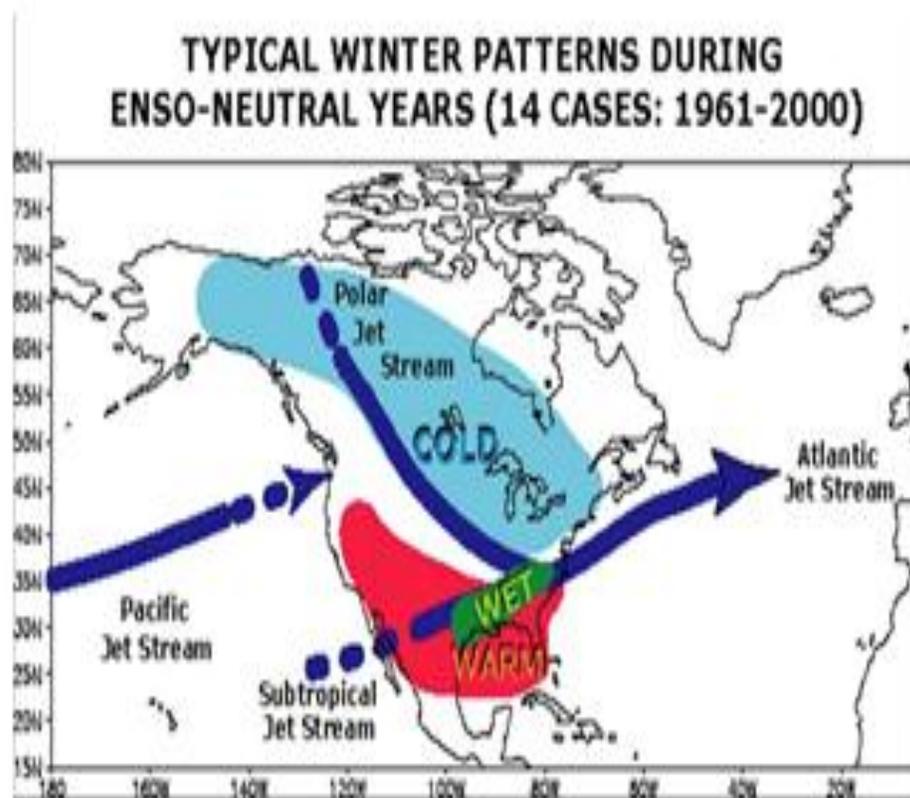


Figure 3. The diagram above is the Climate Prediction Center’s depiction of the typical winter weather pattern during ENSO neutral years. The blue arrows are the positions of the typical jet streams that impact the United States during the winter months during ENSO neutral years.

For the majority of ENSO neutral winters (Figure 4) the typical outcome is colder than normal temperatures over the northern plains into the western Great Lakes while slightly above normal temperatures typically occur over the southeastern United States. If you compare the composite temperature anomalies map below to the CPC temperature anomalies forecast for this coming winter, you may note they are rather similar in that both show colder than normal over the northern plains. Southwest Michigan is on the edge of the “cold anomaly” with the composite forecast.

Composite Temperature Anomalies (F)
Versus 1981–2010 Longterm Average
Dec to Feb 1951–52,1952–53,1953–54,1956–57,1958–59,1959–60,1960–61,1961–62
1966–67,1978–79,1980–81,1981–82,1983–84,1985–86,1989–90,1990–91,1992–93,1993–94,1996–

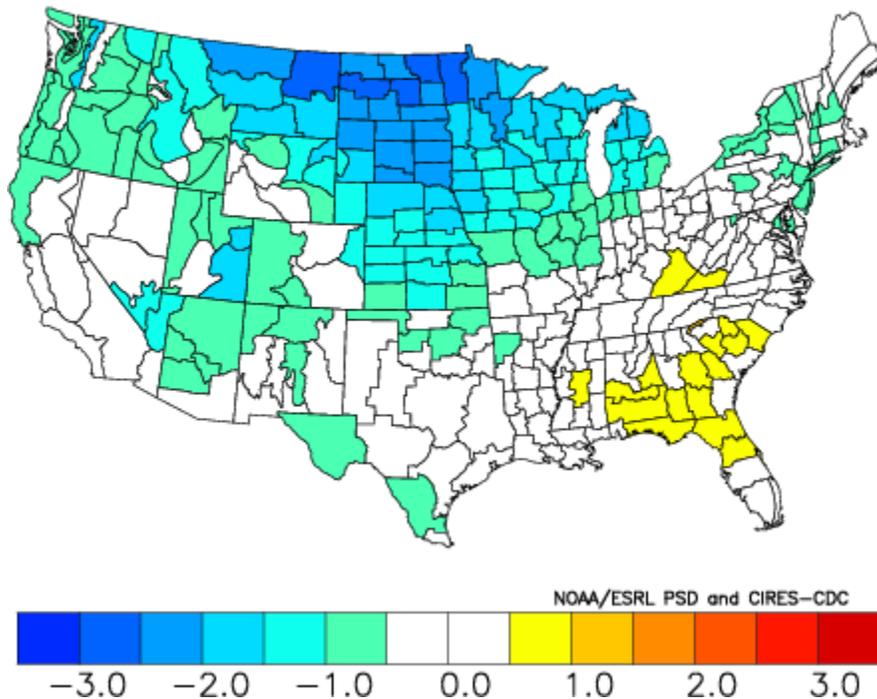


Figure 4. The composited temperature for all ENSO neutral winters, using the 1981 to 2010 normal as a basis for the temperature anomaly.

The precipitation anomaly (Figure 5) for all ENSO neutral winters from 1950 through 2010, shows near normal precipitation across most of the Great Lakes. Note, the above normal precipitation area over the southeastern United States looks very similar to the official CPC forecast.

Composite Precipitation Anomalies (inches)
Versus 1981–2010 Longterm Average
Dec to Feb 1951–52,1952–53,1953–54,1956–57,1958–59,1959–60,1960–61,1961–62
1966–67,1978–79,1980–81,1981–82,1983–84,1985–86,1989–90,1990–91,1992–93,1993–94,1996–

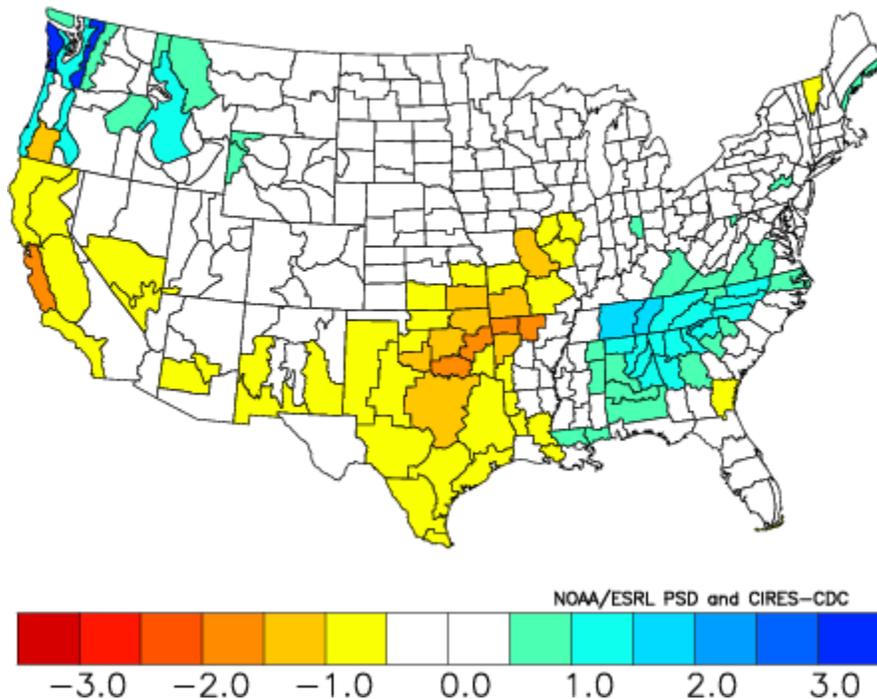


Figure 5. The composited precipitation for all ENSO neutral winters, using the 1981 to 2010 normal as a basis for the precipitation anomaly.

The snowfall composite from 1948 through 2006 for November through March snowfall (Figure 4) shows near normal snowfall when all 38 ENSO neutral winter snowfalls are averaged together (Figure 4). The average departure from normal for snowfall for all ENSO neutral years Grand Rapids is +6.2 inches. At Muskegon it is -3.3" and Lansing it is 0.0". These numbers are all within range that is considered normal.

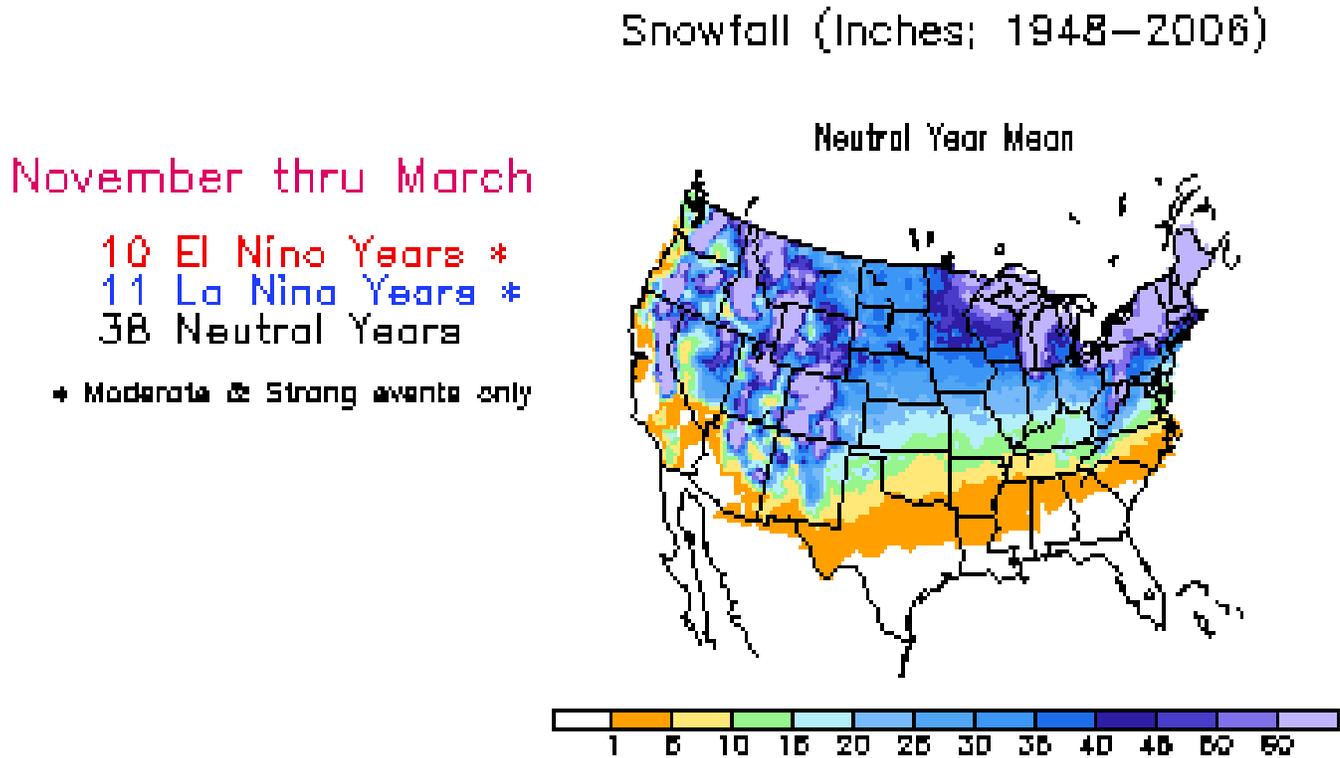


Figure 4. The ENSO neutral snowfall composite (near normal)

Below are some links to key web sites related to this forecast:

[The Climate Prediction Center Long Range 3 Month Forecasts](#)

[The Climate Prediction Center's Discussion for the Long Range Forecast](#)

[The Probability of Temperature Exceeding Normal for the Winter Forecast](#)

[CPC Climate Briefing Page](#)

(see # 31 for ENSO forecast, # 32 for composite forecasts, #42 Drought blend tools)

[Climate Monitoring and Weather Monitoring](#)

(AO index, PNA index, NAO index, ENSO tracking, Madden-Julian tracking, Storm Tracks)