National Weather Service Forecast Office Chicago

Weather Currents

Fall 2014

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Inside this issue:

Snowfall Reminders

by Amy Seeley, Hydro-Meteorological Technician/Climate Focal Point

Well we have already reported a trace of snow across portions of northern Illinois and northwest Indiana this fall season, so a reminder on how to measure snowfall is in order. It's time to pull out your snowboards and snow sticks, dust them off, and let's review!!

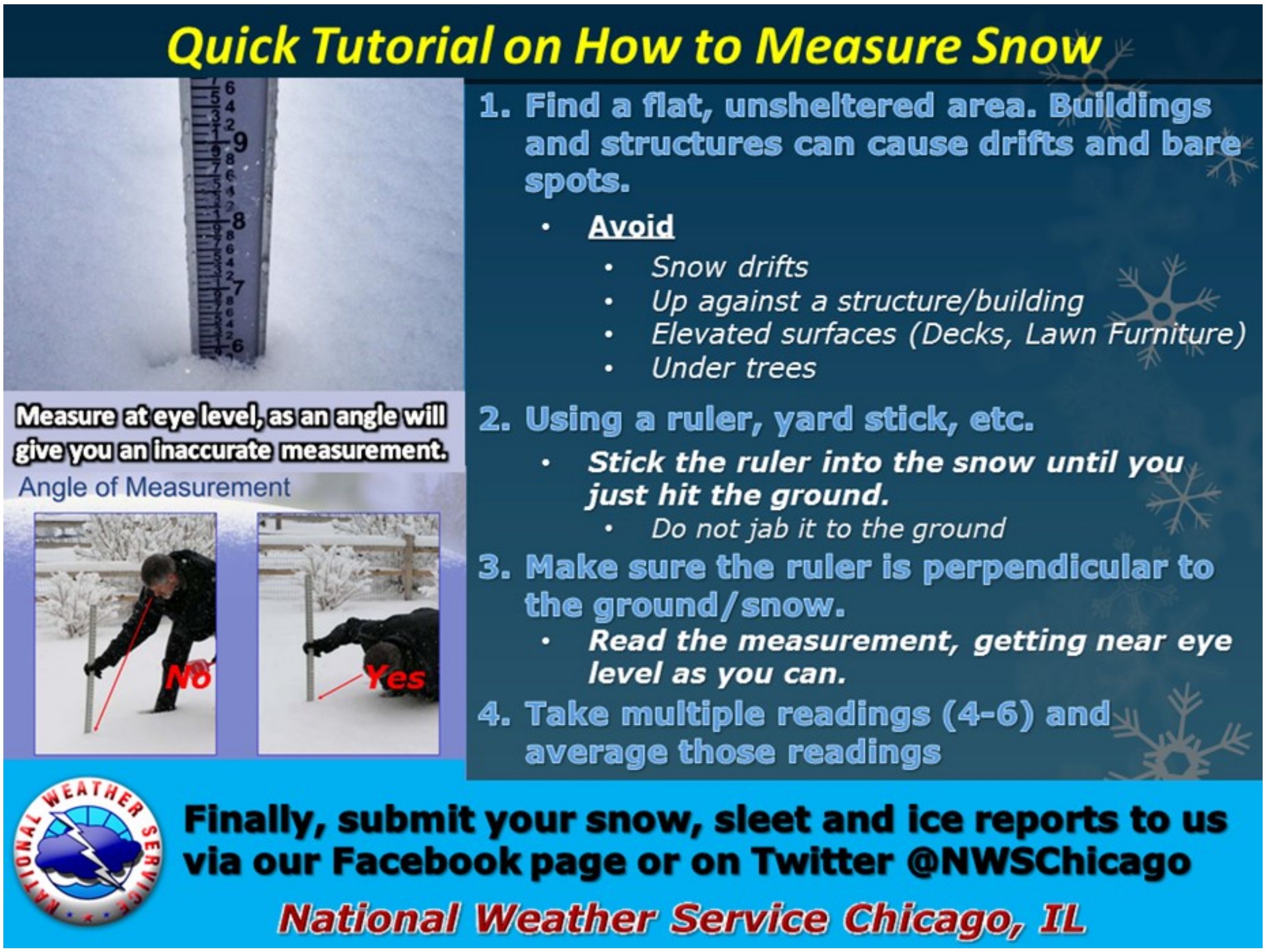
For our experienced Cooperative Weather observers, here is a quick reminder. For precipitation total, melt down whatever has fallen in the large outer tube, pour into the inner tube, and measure (reported in hundredths). **Make sure that the inner tube and gage top has been removed beforehand, so the gage can catch the snow!!**

To report new snowfall, your primary method should be your snow board. However, if it was a high wind day and snow has drifted, take a few extra measurements around the yard to ensure that it is representative (reported in inches and tenths).

Finally, you will need to report snow depth (both old and new snow) - take several measurements to determine an average depth (reported in whole inches).

Snowfall Reminders

If you are new to taking snow measurements, here is a quick graphic that describes the process. Measuring snowfall accurately and precisely is important but surprisingly hard sometimes. We at the National Weather Service rely heavily on volunteers and the general public to provide snowfall measurements during winter weather events. We ask that you follow the procedures below as closely as possible when measuring snowfall and then forward the report on to us.



For the most accurate snowfall measurements, it is suggested that a snowboard be used. A piece of wood, painted white about 16" by 16" will work well. The snowboard is used to measure new snowfall and will need to be cleaned off after each measurement. To measure snow depth, you can place a second snowboard near the first one. This depth snowboard will not be cleaned off after each measurement and will allow for natural settling and melting to take place, allowing for a more representative measurement of snow depth. A ruler or yardstick can also be staked out in your yard to facilitate easy snow depth measuring. If you are using a ruler, remember to convert fractions of an inch to a tenth of an inch. To help with the conversion, check out the following link at http://www.crh.noaa.gov/images/mpx/Coop/SnowfallConversionChart.pdf.

Snowfall Reminders

If you would like more information on how to accurately measure snowfall or information on the other types of useful snowfall and winter precipitation measurements, then please see the following resources:

⇒ "In Depth" Snow Measuring - A CoCoRaHS Tutorial on snow measurement techniques.

⇒ Snowfall Measurement Guidelines - A comprehensive list of instructions used by our Cooperative Weather Observers for measuring winter precipitation.

⇒ "Measuring Snow" Video - The "Measuring Snow" video is provided under the following restricted use license: no modification of the content of the original video or redistribution of the video is authorized. *Copyright 1998-2005, Colorado Climate Center, All rights reserved.* (requires Windows Media Player)

⇒ The Snow Booklet: A Guide to the Science, Climatology, and Measurement of Snow in the United States by Nolan J. Doesken and Arthur Judson.

Photo by Andrew Tomcheck

Possible El Niño Conditions this Winter and What this Might Mean for the Area?

by Kevin Birk, Journey Forecaster and Ricky Castro, Meteorological Intern

After one of the coldest and snowiest winters in history across the region last winter, many are left wondering what is in store for this coming winter. To forecast what the winter season will be like requires studying large scale weather patterns (storm tracks) across the Northern Hemisphere, and trying to determine how these weather patterns may behave over the coming months. Ultimately, the mean position and strength of the storm track across North America has a large consequence on the type of winter season the area experiences. Unfortunately, there are several phenomena that have low predictability, which can have profound influences on the strength and placement of the winter season storm track. Therefore, forecaster uncertainty in the type of conditions that will be experienced a couple of months in advance tends to be much higher than a forecast for the next few days. Although there is some general understanding on how these oscillations impact the larger scale weather patterns across North America, a complete understanding is lacking. Overall, long term forecasting, such as monthly and seasonal is still in its infancy, with much more research needed to totally understand and predict larger scale weather patterns, as well as their regional impacts for upcoming seasons.

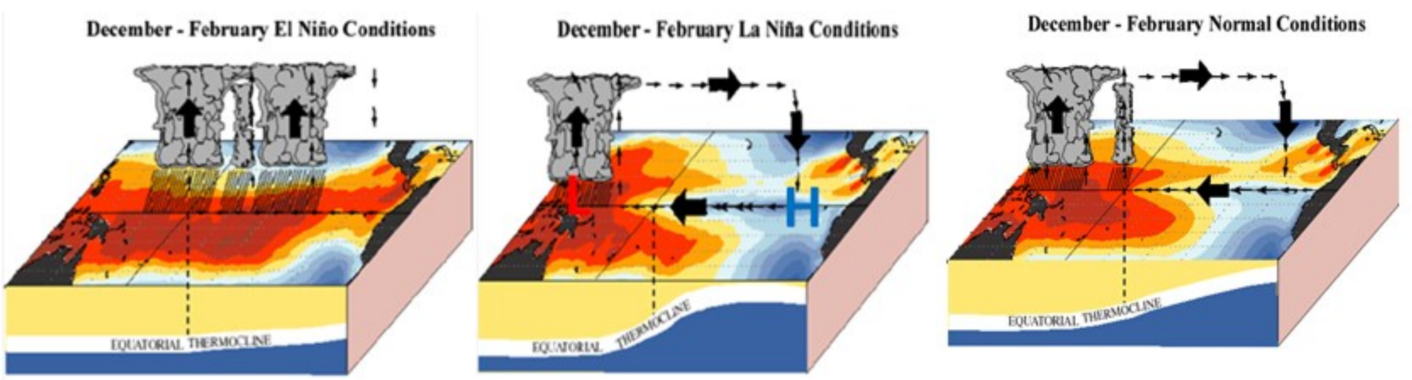


Figure 1 . The typical winter season conditions across the equatorial Pacific observed during El Niño (left) and La Niña (center) and Neutral (right).

The potential of an El Niño event this winter has been the ongoing story for several months now. However, some may ask what is El Niño? In short, El Niño is one part of the El Niño Southern Oscillation (ENSO). The ENSO is a naturally occurring ocean and atmospheric oscillation that occurs across the equatorial Pacific. An oscillation is a motion that repeats itself over a period of time, and this repeating timescale is between about 3 to 7 years for the ENSO phenomena. There are three phases that make up the ENSO. They are: El Niño, La Niña and Neutral. One of the primary defining characteristics of these three phases of the ENSO is Sea Surface Temperature (SST) anomalies (departures from average) across the central and eastern equatorial Pacific. During El Niño conditions, warmer than average SSTs are found along the equator in the central and eastern Pacific region (left-side of figure 1 above). Just the opposite occurs during La Niña events (center of figure 1). However, during ENSO Neutral events SST’s are near normal across the equatorial Pacific (right-hand of figure 1).

Possible El Niño Conditions this Winter and What this Might Mean for the Area? (cont)

The importance of these SST anomalies lies in the fact that they largely dictate where tropical thunderstorms will develop and be the most persistent. Thunderstorms thrive over warm ocean waters in the same way tropical storms and hurricanes do in the Atlantic. During El Niño events, the warmest ocean waters, which are typically located across the west, set up farther east across the central and eastern equatorial Pacific region. Therefore, this area becomes more favorable for tropical thunderstorms during the Northern Hemisphere cold season. These thunderstorms can be considered as a "bridge" between the ocean and the atmosphere. As these thunderstorms develop, they act to induce lower-level atmospheric low pressure across the central and eastern equatorial Pacific region and higher pressure in the upper levels of the atmosphere (left side of figure 1 above). This process results in much weaker easterly trade winds, which in turn helps maintain the warmer SST pattern across the central and eastern equatorial Pacific water by reducing the magnitude of upwelling of cooler waters near the South American coast. Just the opposite occurs during La Niña events (center of figure 1 above). It is this process that can produce significant changes to the larger scale atmospheric circulation in the tropics and also throughout much of the Northern Hemisphere.

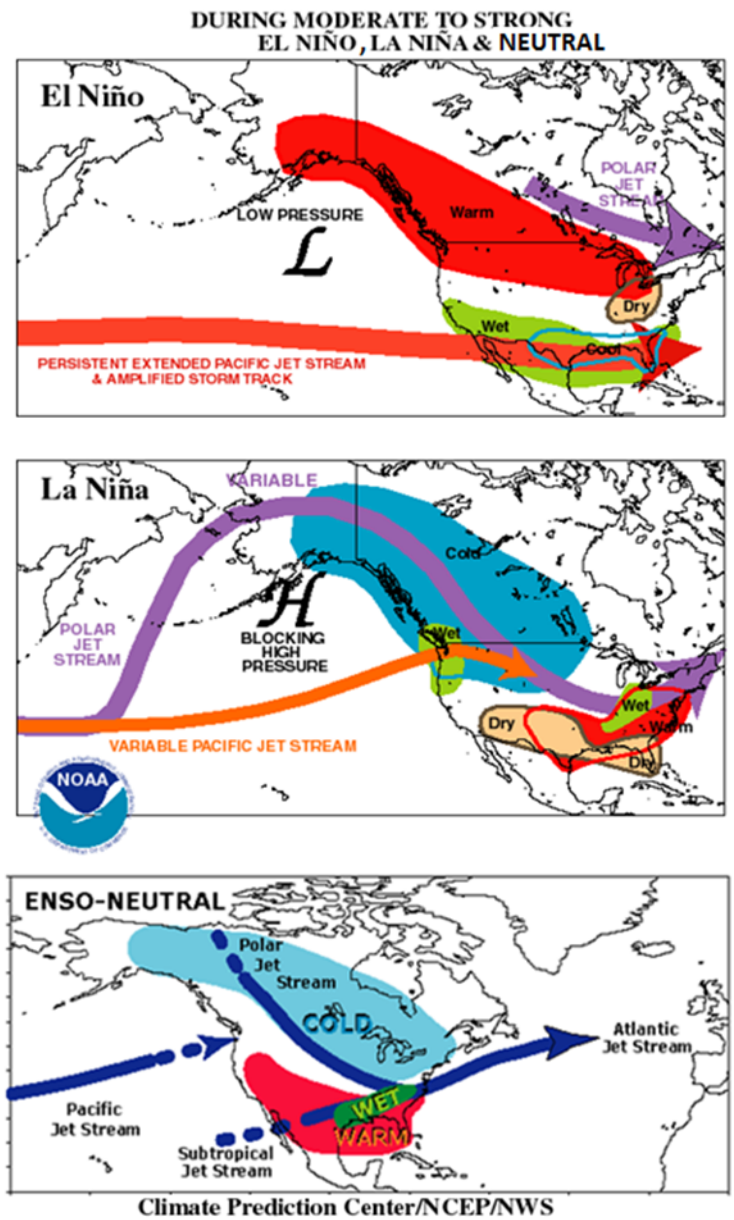


Figure 2. The typical upper level jet stream/storm track during El Niño (top), La Niña (middle) and Neutral (bottom) winters. Courtesy of NOAA, Climate Prediction Center

Possible El Niño Conditions this Winter and What this Might Mean for the Area? (cont)

Typically the stronger a particular ENSO event is, the greater the impact it will have on the placement and strength of the cold season storm track across Northern America. Figure 2 displays the typical winter season storm track during each ENSO phase. The main characteristic of the flow pattern for La Niña is the presence of a large area of high pressure across the North Pacific. This area of high pressure acts as a "block" to the upper level flow which causes the storm track to buckle northward around the high and then southward across western North America. Dynamics associated with this atmospheric flow pattern also tends to favor high pressure across the southeastern United States, which in turn buckles the storm track back northward across the mid-Mississippi valley and the Great Lakes region. This tends to support colder and snowier conditions across the north central CONUS. In contrast, during particularly strong El Niño events, the main storm track extends from the Pacific eastward across the southern portion of the country, which supports drier and warmer winters across much of the Great Lakes region. However, weaker El Niño events do not necessarily produce this same pattern, as will be shown shortly. During ENSO Neutral winters, the overall storm track can mimic those of La Niña events, with cold conditions favored, especially across the northern CONUS. Unfortunately for long range forecasting, not every ENSO event produces the same impacts, as there are many other atmospheric and oceanic factors that can modulate or even totally dominate over the effects of a given ENSO event.

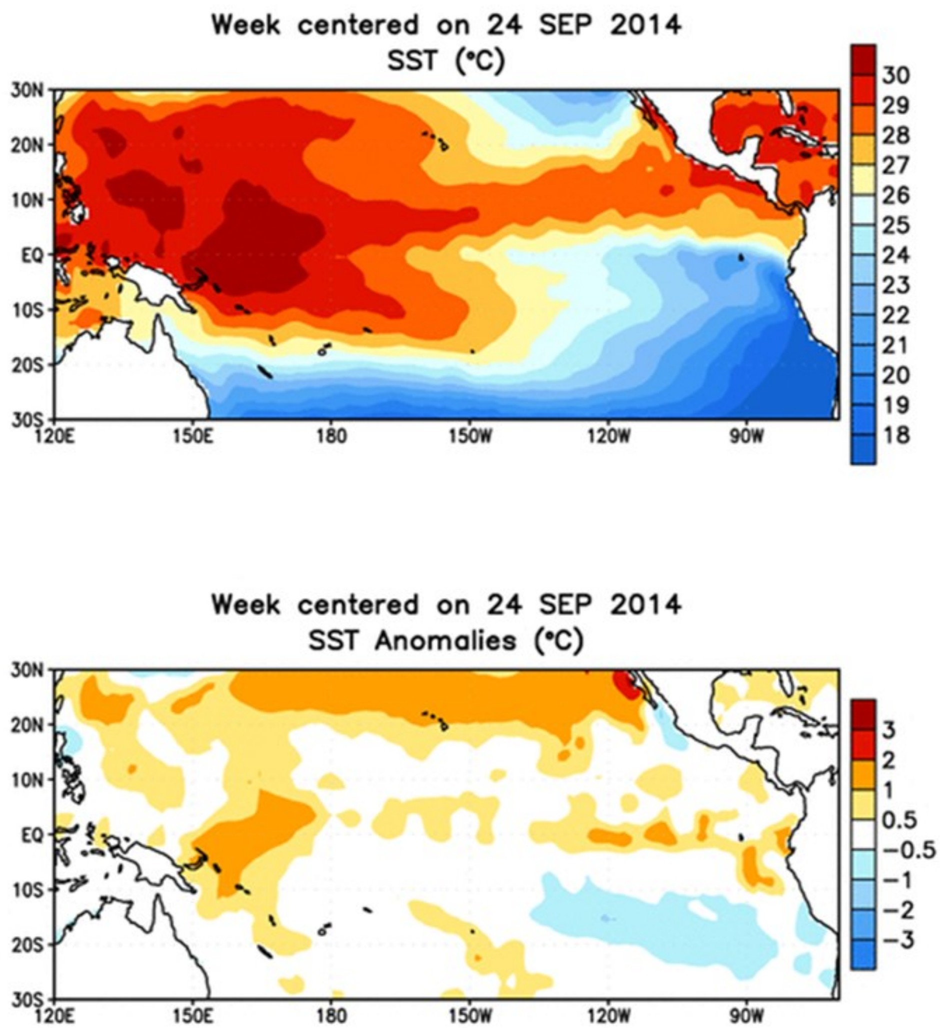


Figure 3 Observed sea surface temperatures across the equatorial Pacific (top) and their departures from average (bottom). Courtesy of NOAA, Climate Prediction Center

Possible El Niño Conditions this Winter and What this Might Mean for the Area? (cont)

So do we have El Niño conditions now? The answer is no, as current conditions across the equatorial Pacific continue to resemble ENSO Neutral conditions as of this writing. Notice that the SST departures from average across the equatorial Pacific are just slightly above average, but overall near normal (less than +0.5 degrees C above average in the bottom of figure 3). The prospects for a developing moderate to strong El Niño event has been the story for the past several months, especially considering as to how it could impact winter season conditions across the country. Unfortunately, previous forecasts for the development of El Niño conditions during the late summer and early autumn season have not verified. This makes the potential for a strong El Niño event this winter very unlikely. Current projections from the Climate Prediction Center (CPC) suggest there is now only about a 60-65 % chance that El Niño conditions will develop by the winter season. Figure 4 below illustrates the latest model forecasts for SST anomalies in the primary Niño region used to assess the statues of ENSO. These model forecasts indicate, that aside from a few outliers, the consensus is that the El Niño event will remain weak (e.g., SST anomalies less than +1.0 degrees C). This is important because history has shown us that weaker El Niño events do not necessarily produce the same larger scale winter weather pattern that stronger events produce. Therefore, the large scale winter season weather pattern illustrated in the top of Figure 2 will not necessarily be the type of weather pattern North America experiences this winter season.

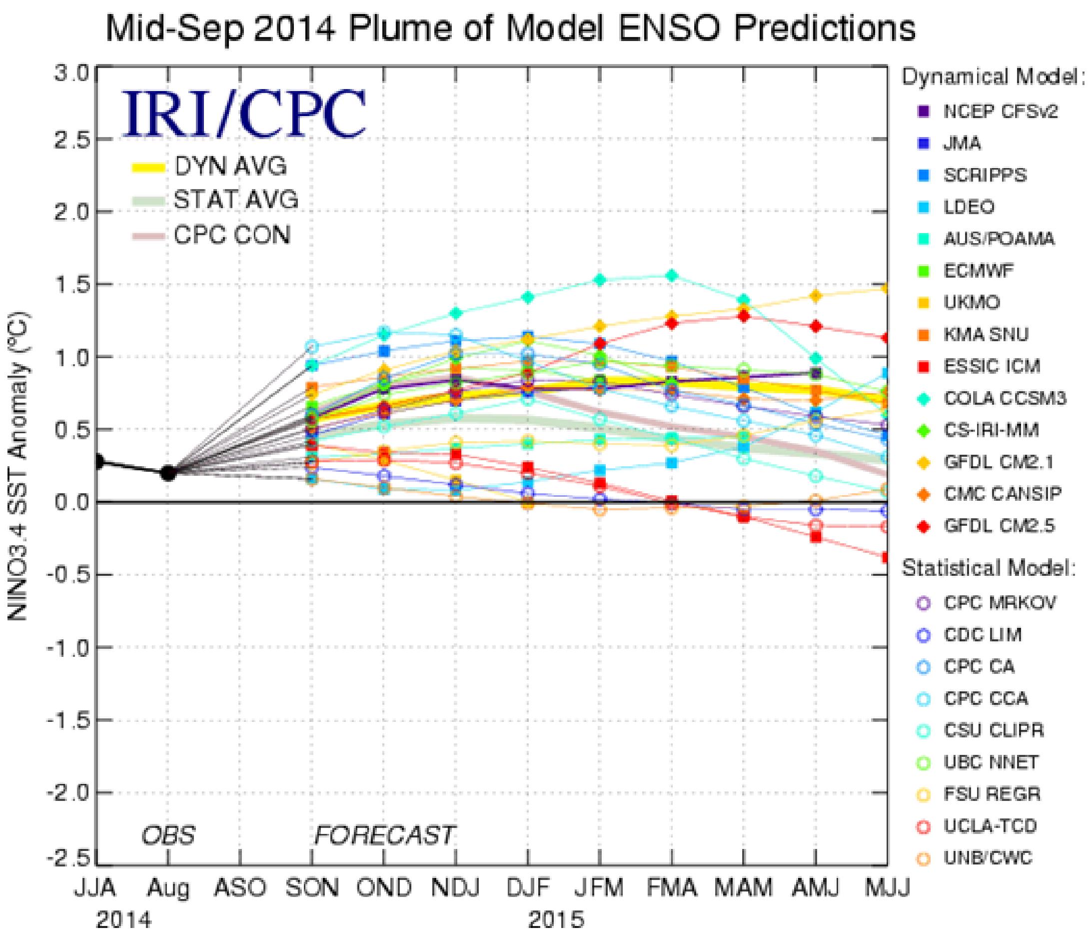


Figure 4. Time series of an ensemble of forecasts for the evolution of Sea Surface Temperature (SST) anomalies across the eastern Equatorial Pacific. An SST anomaly threshold of +0.5 to +1.0 indicates the presence of weak El Niño conditions.

Possible El Niño Conditions this Winter and What this Might Mean for the Area? (cont)

To illustrate the different larger scale storm track patterns across North America between weak and strong El Niño events consider Figures 5 and 6. These figures illustrate a composite of the upper level storm track using several past strong and weak El Niño winter seasons (December through February), respectively. Notice that during strong events (figure 5) upper level low pressure is favored over the central and eastern Pacific, which acts to induce a splitting upper level jet stream structure to the east across much of North America. This type of large scale pattern tends to support mild winters with below average snowfall across much of the northern United States. This splitting jet structure acts to buckle the polar jet well north into Canada, while the southern stream remains active across the far southern CONUS. This general pattern is typically associated with El Niño events and is similar to that shown at the top of figure 2. However, notice that the pattern shown in figure 6 indicates a different overall pattern. Overall, weaker El Niño events do not typically produce as much tropical thunderstorm activity across the far eastern Equatorial Pacific as their stronger counterparts. As a result, the upper low that tends to be favored during stronger events is usually weaker, which in turn can support a modified upper level pattern supportive of colder conditions across the eastern United States. It is worth noting, however, that variability exists amongst the events included in the composite shown in figure 6. Therefore, colder conditions are not necessarily favored across the eastern CONUS in all weak El Niño events and during the entire season as the figure below suggests. This is just meant to illustrate the fact that the typical warm winter seasons associated with El Niño events is not a certainty, especially given during a weak event, and therefore adds additional uncertainty to the outlook for this coming winter. Research has also shown that the exact geographical placement of the warmest ocean waters along the equator during an El Niño event can influence the overall impacts of the event during the winter.

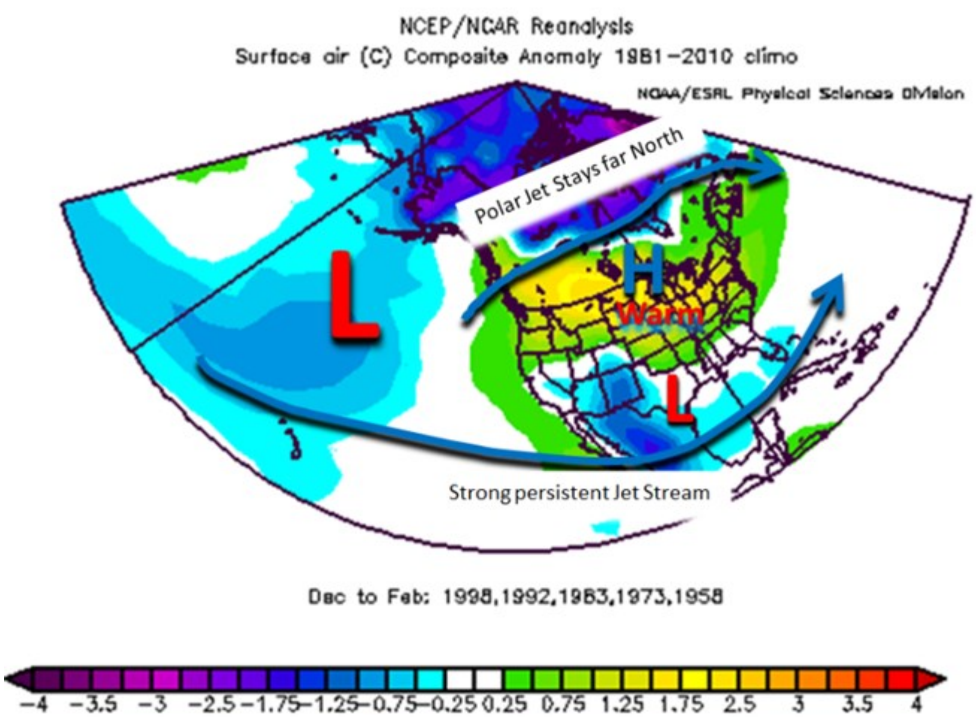


Figure 5. Composite map showing winter seasons during strong El Niño events. The blue arrows show the main placements of the upper level jets and the warm (cool) colors indicate positive (negative) temperature anomalies.

Possible El Niño Conditions this Winter and What this Might Mean for the Area? (cont)

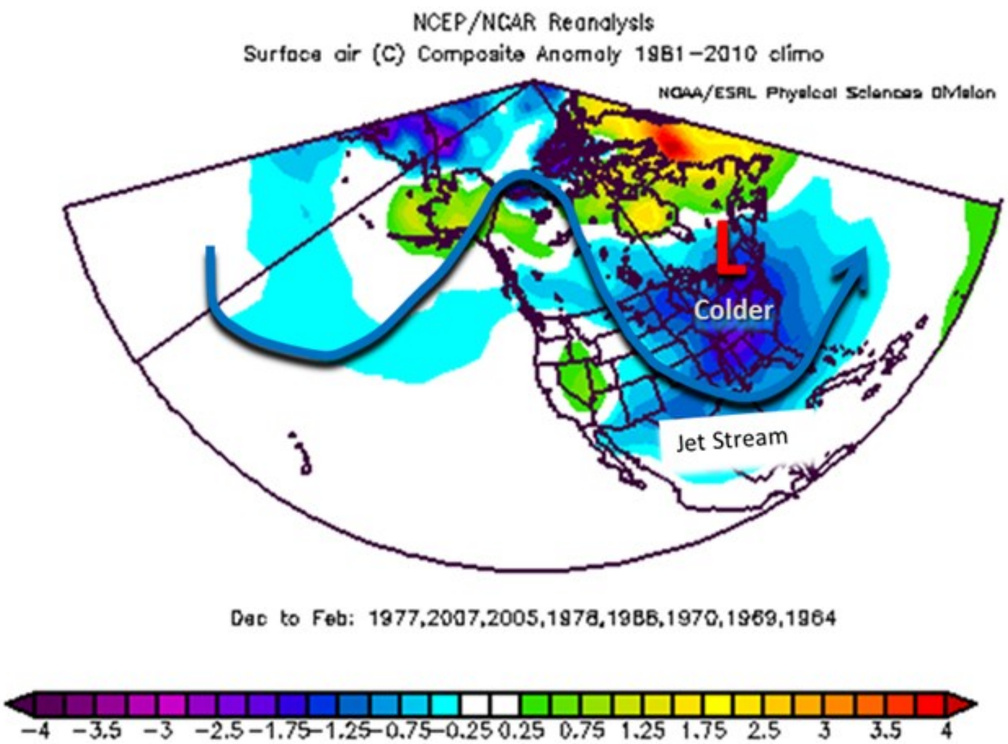


Figure 6. Same as figure 5 except during weak El Niño events.

Locally the differences between weak and strong El Niño events can be quite significant. Figure 7 shows that the average winter season (December through February) temperatures tend to be colder during weak events and much warmer during strong events. The thing that really stands out is that the temperature for the 75th percentile (meaning 75% of the events were colder than the indicated value) of weak events is about the same as the climatological mean, while the 25th percentile of strong events is around the climatological median. This indicates that there is evidence to suggest that a weak El Niño event will not necessarily produce a much warmer than normal winter season across the region.

Possible El Niño Conditions this Winter and What this Might Mean for the Area? (cont)

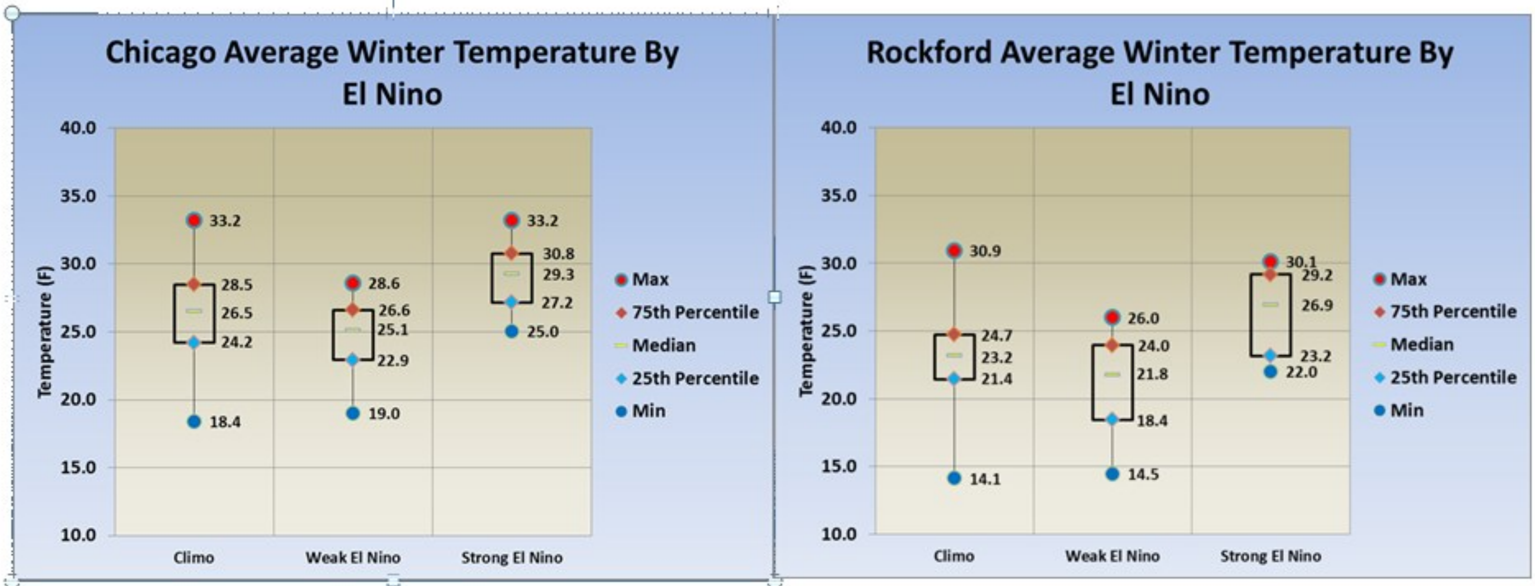


Figure 7. Box and Whisker plots showing the distributions of winter season (December through February) temperatures during weak and strong El Niño events relative to Climatology at Chicago, IL (left) and Rockford, IL (right).

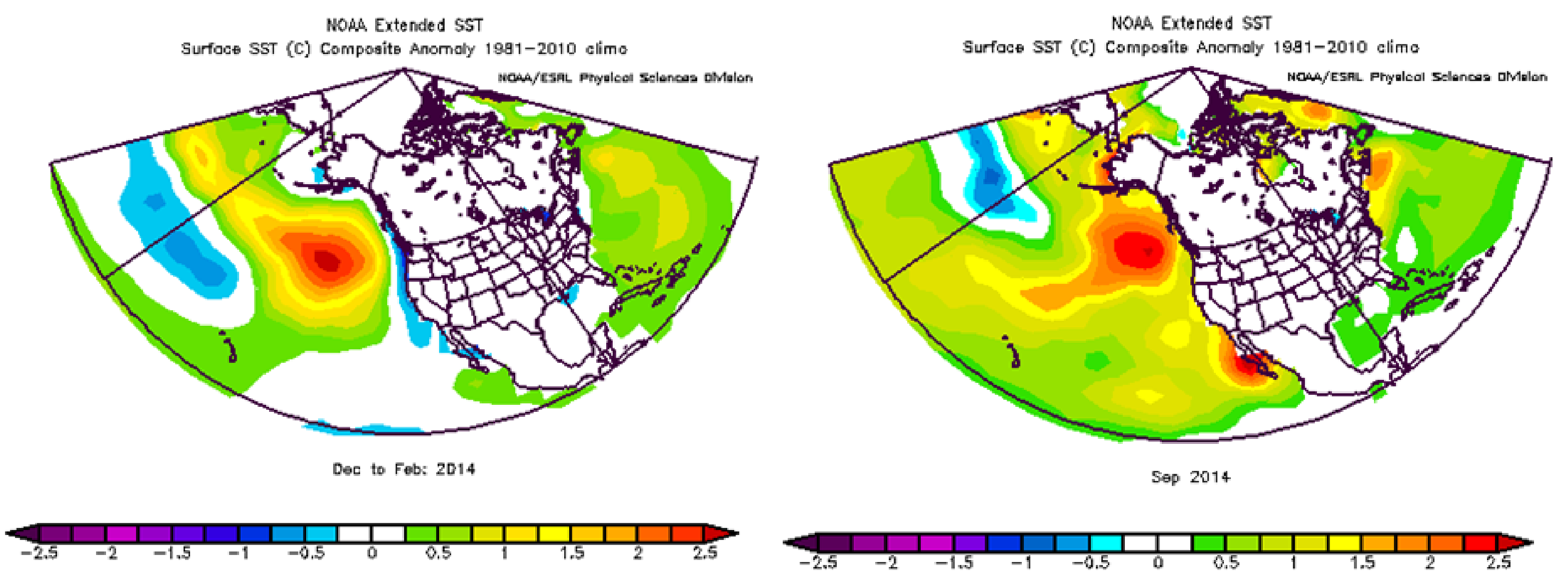


Figure 8. Sea Surface Temperature (SST) anomalies across the Pacific and Atlantic during the winter 2013-14 (September 2014) left (right).

Possible El Niño Conditions this Winter and What this Might Mean for the Area? (cont)

Although SST anomalies are not at a high enough magnitude across the equatorial Pacific to be considered as El Niño yet, much of the Northern Pacific is warmer than average (right side of figure 8). This warm pool has been in place since last fall and winter (left side of figure 8), and likely helped play at least some role in helping to shape the larger scale flow pattern that produced a very cold winter across the region last year. This SST pattern suggests that we are currently in a positive phase of the Pacific Decadal Oscillation (PDO). The PDO is an ENSO-like oscillation that occurs in the North Pacific (Northward of 20° latitude). However, unlike ENSO, the PDO tends to have a period of variability on interdecadal time scales (Figure 9). This means that one phase of the PDO will usually last a decade or two. This is not always the case, however, as shorter interannual periods of variability also exist within the PDO, meaning it can shift from one phase to the other and back on much shorter timescales. Figure 9 displays the behavior of the PDO since 1950, and you can see that while the PDO has been primarily in a negative phase since the late 90s, there are also much shorter periods in which the PDO has shifted to a positive phase (denoted by the smaller red bars). It is currently uncertain as to how long we will remain in the positive PDO phase. There has been some cooling of these waters over the past few weeks due to strong storms churning up the northeastern Pacific. However, it still appears quite possible that the PDO could remain in a positive phase through the upcoming winter season.

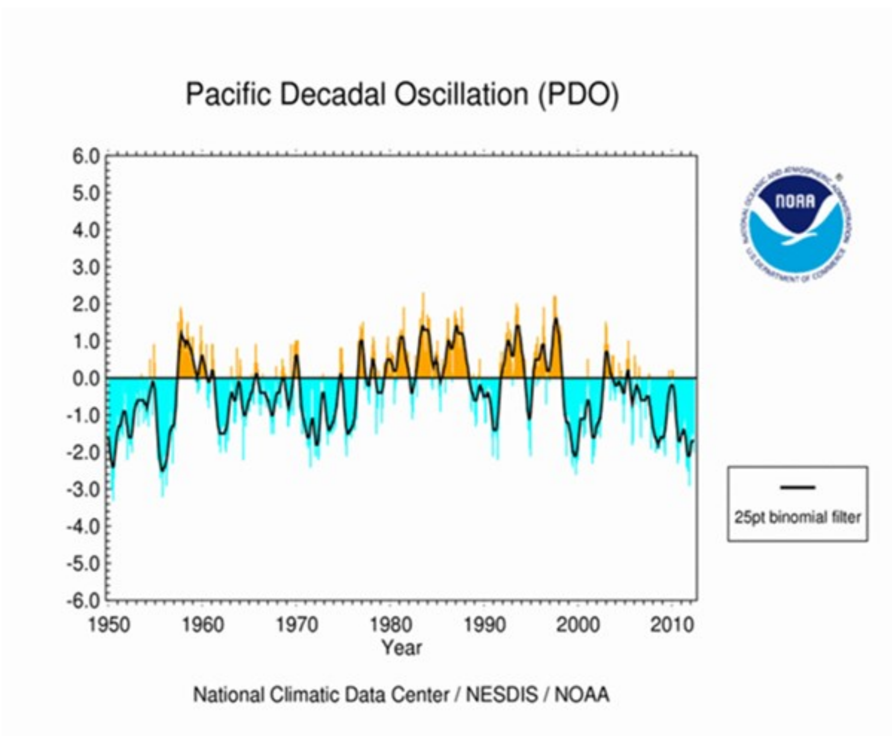


Figure 9. Behavior of the Pacific Decadal Oscillation (PDO) since 1950.

As such, it is possible, but not a certainty that these warmer eastern Pacific SSTs associated with a +PDO pattern could again help promote another similar area of upper level high pressure over the northeast pacific and possibly over western North America, similar to that shown in figure 9 above and in figure 10. Such a pattern would favor a buckling jet stream southward across the eastern half of the United States, which would support periods of colder than average conditions during portions of the winter season. However, although this scenario is certainly possible, it is too early to say definitively that this will be the case, and also that the pattern will remain strong enough to result in persistently colder than average conditions.

Possible El Niño Conditions this Winter and What this Might Mean for the Area? (cont)

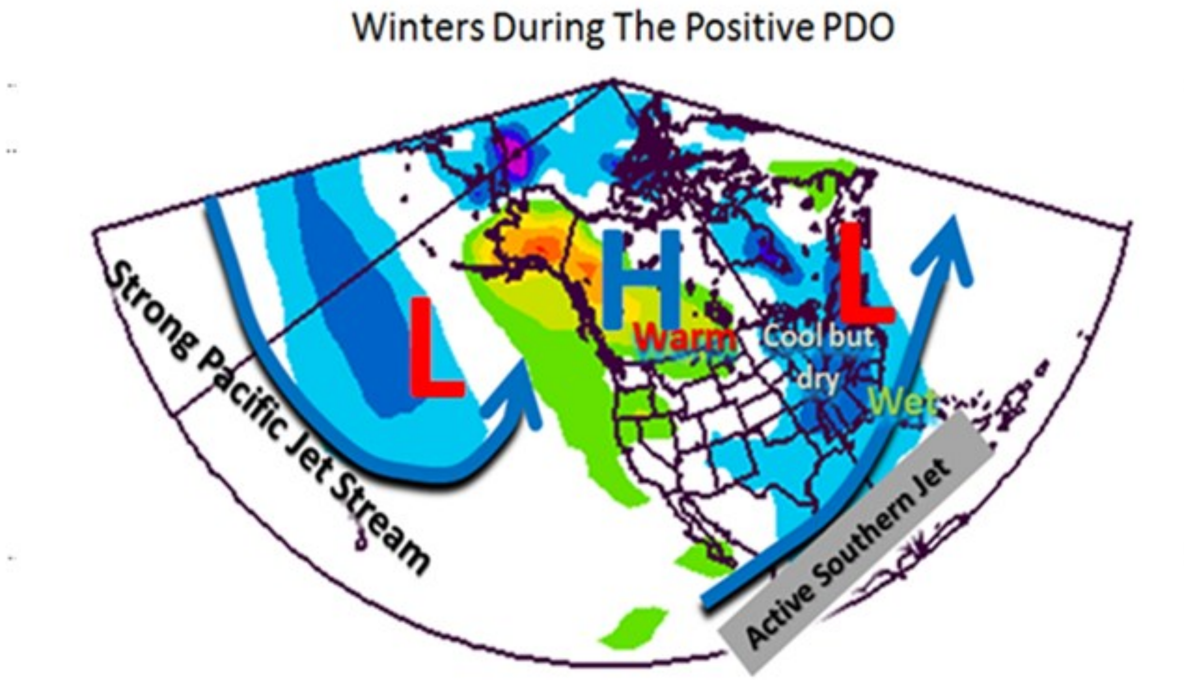


Figure 10. Typical winter season conditions during the positive PDO. The large blue arrow indicates the approximate placement of the Jet.

Looking back to last winter, SST anomalies were in excess of 2.5 degrees Celsius across much of the northeastern Pacific. Warm ocean temperatures can play a role in helping set up higher pressure in the mid and upper levels of the atmosphere. This appeared to be the case last winter (left side of figure 11). This strong high pressure ridge proved very instrumental in producing the persistent cold and snow over the region as it acted to block the Jetstream (from due west to east flow) across the eastern Pacific. Meteorologically this is referred to as a blocking high pressure ridge. When this occurs, the Jetstream is buckled around the area of high pressure, then forced significantly southward to the east of the block. In the case of blocking events such as this, the downstream region is the eastern half of North America. The black line in the figure illustrates the behavior of the Jetstream last winter. This pattern is classic for allowing persistent deep arctic air intrusions as well as numerous snow producing storm systems to spill in over the eastern half of the country (right side of figure 11).

Possible El Niño Conditions this Winter and What this Might Mean for the Area? (cont)

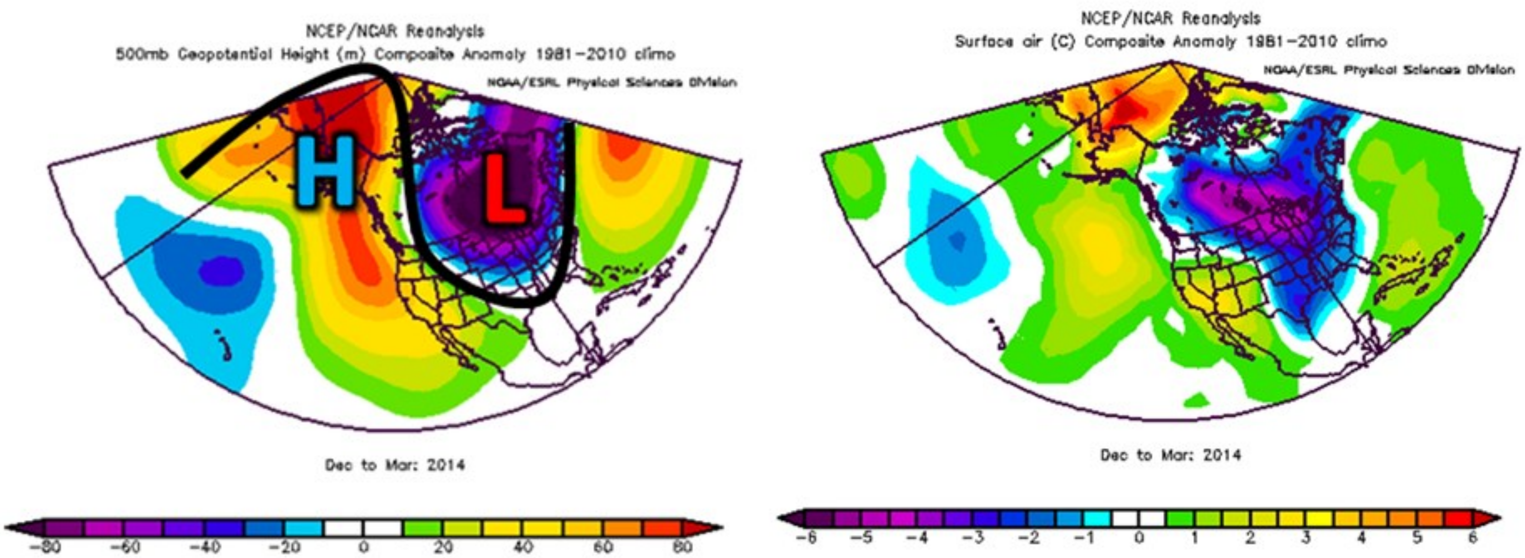


Figure 11. Jet stream pattern during the winter 2013-14 (left), and the surface temperature anomalies (right).

Another aspect that could drive winter season conditions across the eastern half of the country is the Arctic/ North Atlantic Oscillation. Both ENSO and the PDO discussed above deal with natural variability across the Pacific. However, another important driver of the storm track during the winter season is the North Atlantic Oscillation (NAO). The NAO is related to the Arctic Oscillation (AO), only it focuses on conditions across the North Atlantic. The AO and NAO are both naturally occurring oscillations that represent flip flops in atmospheric pressure between the high latitudes and the mid latitudes of the Northern Hemisphere. The main difference is that the NAO is just localized to the North Atlantic Ocean. The NAO can significantly alter the winter jet stream pattern across North America over what the ENSO and the PDO phases might otherwise suggest.

Similar to the PDO, there are two phases that make up the NAO and the AO; a positive and a negative phase. The negative phase of the AO features relatively high atmospheric pressure across the high latitudes of the arctic, with lower pressure across the mid-latitudes. Similarly the negative phase of the NAO features above average pressure across the high latitudes of the North Atlantic near Greenland and Iceland, and lower pressure across the mid-latitudes of the Atlantic (top right of figure 12). The positive phases of the AO and NAO are the opposite of the negative phase (top left of figure 12).

Possible El Niño Conditions this Winter and What this Might Mean for the Area? (cont)

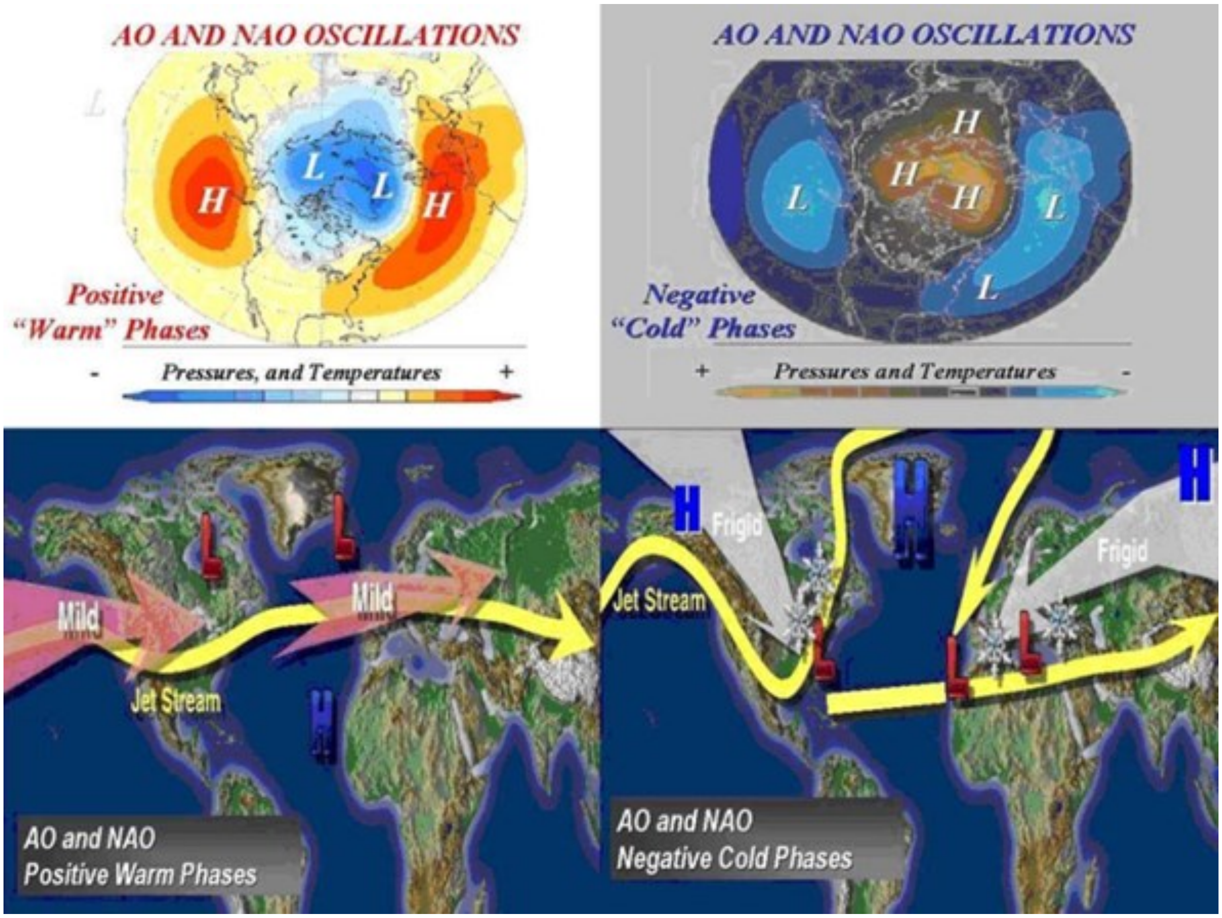


Figure 12. The Positive and Negative Phases of the AO and NAO (icecap.us).

These pressure anomalies can have a profound impact on the strength and geographical location of the storm track across the Northern Hemisphere. The negative phases produce a weaker jet across the higher latitudes of Canada and the North Pacific (bottom right figure 12). This allows the storm track and the cold arctic temperatures to drop southward across the central and eastern United States. The higher pressures over the Arctic and Greenland areas also serve as a bottle neck, or blocking in the atmosphere at the higher latitudes. This high latitude blocking also prevents cold air masses from quickly exiting the central and eastern United States. As a result, winters can tend to be colder during prolonged periods of the negative phase of the AO and NAO. In contrast, the anomalous pressure patterns associated with the positive phases of the NAO and AO induce a stronger westerly upper level jet across the northern latitudes of Canada and the North Atlantic and reflect a lack of high latitude blocking. This makes it very difficult to get cold air to spill southward across the central and eastern United States, and any cold air that does move into the region is not blocked from exiting quickly off to the east with the fast jet stream flow. As a consequence, winters tend to be warmer during prolonged periods of the positive phase of the AO and NAO. Although this is the case most of the time, it is not always the case. Last winter was a prime example of this, as the AO and NAO were predominately in a positive phase.

Possible El Niño Conditions this Winter and What this Might Mean for the Area? (cont)

Given the impacts the NAO has on the winter season conditions; it is definitely another very important player for determining what this winter could bring. The NAO is very difficult to predict more than a few weeks in advance, so many long range forecasts do not take this into account. However, new research within the past few years is promising in terms of predictability of the predominant seasonal scale AO/NAO pattern. This research suggests that rapidly increasing October snowfall across Siberia can lead to a pre-dominately negative AO/NAO during the following winter season. So what has Siberian snowfall been like thus far this October? Through the 18th of October Siberia has been experiencing a very quick advancement of snowfall, much above a normal year. Figure 13 below from Rutgers Global Snow Lab displays the current snow cover (as of October 18th) across the high latitudes (snow shown in brown, left side of figure 13) of the Northern Hemisphere. Also shown is the departure from normal (right side of figure 13). If this research is correct, this could mean that the AO/NAO pattern could favor a negative phase this coming winter, which would support colder conditions across the eastern half of the country.

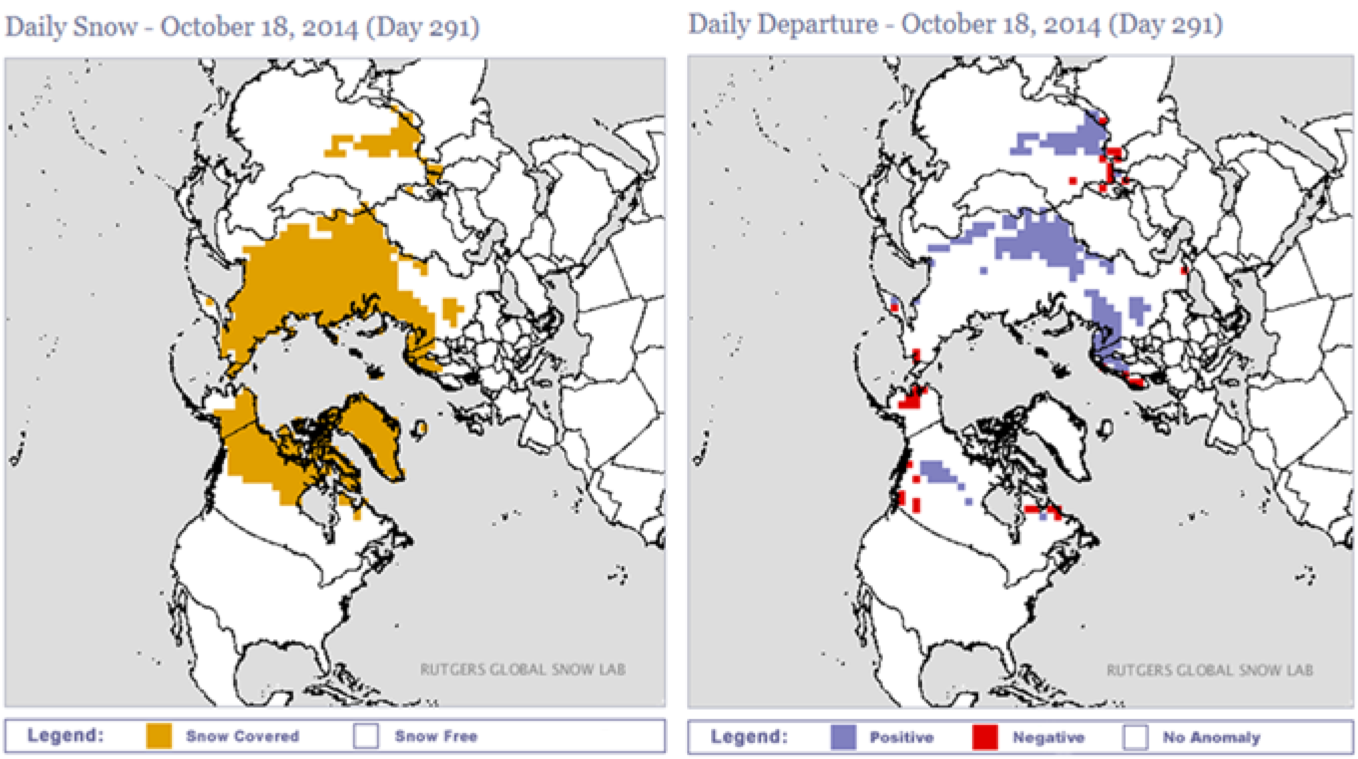


Figure 13. Current Northern Hemisphere snow cover as of October 18th, 2014 (left), and the departure from normal (right). Courtesy Rutgers Global Snow Lab

In summary, although it is a bit too early to give a more definitive forecast on how cold and snowy this winter will end up being, there are certainly several factors that point to a potential colder than average winter across the region. However, as with any long term forecast, things could certainly change. In spite of all the uncertainties with this upcoming winter, it would be very unlikely to be as brutally cold and snowy a winter as that experienced last winter, especially since last winter's combination of cold and snow is quite rare going back through the entire historical record.

Cooperative Observer Awards

by Bill Nelson, Observation Program Leader

Larry Acker of rural Polo, IL received recognition from the National weather Service for 15 years of service as a Cooperative weather observer.

The NWS weather records for Polo go back to June 1, 1995 when Larry volunteered his services and location to record precipitation and temperature as part of the NWS's Cooperative Observing network. However it should be noted that Larry's great-grandfather, William Edward Acker, began taking unofficial readings back in 1883. Larry took over taking the unofficial readings from his grandfather in 1949.

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Del Johnson of Shirland, IL recently received recognition from the National Weather Service (NWS) for serving 15 years as a Cooperative Weather Observer.

Weather records for Shirland date back to February 1953 when William. H. Jones began keeping river stage records at the junction of the Sugar River and Pecatonica River. Mr. Jones took observations until March of 1953, when Mr. Clarence L. Rieff and his wife took over the duties. The Rieffs also began taking daily precipitation totals in April of 1959. They took the readings until Mr. Rieff's death in November 1970. Weather records were discontinued until February 1973, when David McKee Jr. resumed taking river stages and precipitation totals at his residence just 0.1 miles west of town. Mr. McKee kept observations until February 1978, when Gary W. Faulkner assumed record keeping duties. Mr. Faulkner only took observations until September 1978, when Kenneth E. Wines become the observer. Mr. Wines maintained river height and precipitation totals through October 1986.

Cooperative Observer Awards (cont)

Then, in December 1986, the rain gauge was relocated to the residence of Thomas H. Strathman who took observations through June 1993. Mr. Matt Bortoli and his wife Toni then took rainfall observations beginning July 1, 1993 until their resignation in October 1996. A three year break in the records came until August 1999, when Del Johnson volunteered to take rainfall data, and has maintained the records for Shirland ever since.

****

Nancy Larimore and her late husband Melvin of Paw Paw recently received recognition from the National Weather Service (NWS) for serving 15 years as Official Weather Observers for Paw Paw, IL.

The precipitation records for Paw Paw started back on August 2, 1912 when A.L. McBride volunteered his services. The observing duties were then given to J.G. Mortimer in May 1931, followed by Alfred Burnett in April 1934. In October 1945, B. H. Koch then took over the observations, followed by Chester W. Gaines in November 1946. Wilbur A. Woods then assumed the observing duties in April 1948. In June 1962, recording temperatures data was added to Mr. Woods' duties. Robert G. Ward then assumed the observing duties in May 1970. Minor and Connie Avery then became the volunteer observers in November of 1981 followed by Melvin and Nancy Larimore in March 1997. (Minor and Connie Avery are the current cooperative observers at Steward, IL.)

Nancy has since resigned as the observer. Randy and Neva Ikeler graciously agreed to take on the observing duties, thus maintaining the long climate history of Paw Paw.

****

Shirley Miller of rural Lake Village, IN recently received recognition from the National Weather Service (NWS) for serving 15 years as a Cooperative Weather Observer.

The precipitation records for Lake Village began on October 1, 1997 when Shirley and her late husband Devon (Skeet) answered a NWS advertisement for observers in Newton County IN.

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New National Weather Service Official observing site in Oregon, Il.

Oregon's Waste Water Treatment Plant (WWTP) is the new location of the National Weather Service's observing site for the city. As coop observers, the staff will record and transmit daily precipitation (rainfall and snowfall) data at 8 AM. The WWTP staff began taking rainfall data on June 27, 2014.

The weather records for Oregon go back to January 1893 when H. P. Hatch began taking rainfall and snowfall measurements from a manual rain gage. Mr. Hatch then quit taking readings in June of 1897. Then 12 years later, Samuel Ray began taking readings at his residence in June 1909. He continued until he resigned in July of 1913. George A. Brown then picked up the observing duties in December of 1913, and continued until April 4, 1917. W. T. Hardesty took the duties over from Mr. Brown the next day. Mr. Hardesty continued until his death on February 29, 1928. On March 26, 1928, J. M. Rock took over the observing duties until March 1, 1929 when he resigned and Victor Jones became the observer for Oregon. Three months later, Victor O. Harshman became the observer on June 27, 1929 when the equipment was moved to the Northern Utilities Power Plant. The rain gage remained at the power plant until November 2, 1949.

Cooperative Observer Awards (cont)

Meanwhile, on October 18, 1939 a recording rain gage was added to the list of equipment. Then on November 3, 1949, the manual rain gage was moved to the Oregon Water Works site and continued to be there until April 25, 1956 when the observations ceased.

Meanwhile, a second observing site began November 2, 1949 when the recording rain gage was moved to the home of George J. Long. Mr. Long continued as the observer for the recording gage until May 19, 1950 when the equipment was moved to the Carnation Plant. The recording gage remained at the Carnation Plant until June 20, 1986 when the recording gage was moved to Terry Carpenter's home. A manual gage was also installed on that date. Terry continued taking readings from both gages until his death in August of 2002. The manual gage was then installed at the Castle State park office on November 1, 2003 and remained there until staff shortages caused the observations to end on June 6, 2013.

New National Weather Service Official observing site in Dixon, IL.

The Waste Water Treatment Facility (WWTF) in Dixon is the new location of the National Weather Service's observing site for the city.

As coop observers, the staff will record and transmit daily precipitation (rainfall and snowfall) data and temperature data at 8 AM. The WWTF staff began taking rainfall data on June 15, 2014 and temperature data on June 26, 2014.

The weather records for Dixon go back to 1890 when observations were taken in Prairieville. Then E. E. Shaw began taking temperature and precipitation measurements in September of 1894, continuing until his death in August of 1902, when his wife took over observations until November of 1909. Henry Bardwell began observations at his home in February of 1910, continuing until October of 1919 when James Lennon became the observer. In January of 1921, Dr. L. R. Evans began observing from his home until April 1924 when Arlene Lord took over observing duties. Paul Schuck became official observer in December 1925, continuing observations until his death in November of 1949 when William Schuck took over observations for the next 9 years. Then Wilma Thompson was the official observer from March of 1958 until June of 1962. The equipment was then moved to the home of Robert Nellis, who remained the official observer until June of 1980. Jeffery Stoner maintained the climate record from June 1980 until July 1982, followed by Wendell Glessner, who took observations until September of 1986, when the station was moved to the home of Edward and Annette Metzler. They continued taking daily readings through October 31 2012 when they had to give up taking rainfall and snowfall data but continued with temperature data until Mr. Metzler's death in February of 2013.

NWS Chicago Debuts New Science Page

by Matt Friedlein, Senior Forecaster

Are you curious of when you last had hail in your neighborhood, or when that tornado was when you were a child? How about how cold it was during the 2013-2014 winter and where that ranks? Do you want to just learn more about the aspects of weather we experience in Northern Illinois and Northwest Indiana?

We at NWS Chicago have recently created a web resource of local past events and scientific studies. This page is an organized "warehouse" of our many past event write-ups that include storm reports maps, radar imagery, and meteorological insight. We have organized these events by their primary impacting phenomena...i.e. tornadoes, winds and hail, snow and ice, etc. We also group detailed reviews of the most notable historic events in the area's recorded weather history...from Chicago's worst tornado outbreak in 1967 to the flooding of September 2008 to the Groundhog Blizzard of 2011. One can even find local research studies the office has conducted on this page.

As with several of our NWS Chicago office projects, this one had help from a talented summer student. Russell Danielson, a senior at Valparaiso University, sifted through our many event reviews, and effectively organized these. His nice work has paid off with this page for all to use!

NWS Chicago Participates In National Weather Service Did You Know Week! #NWSDYK

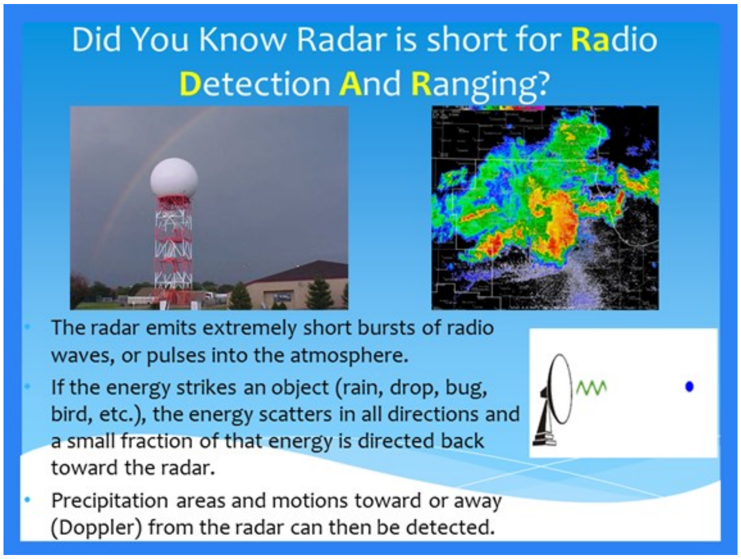
by Stephen Rodriguez, Journeyman Forecaster

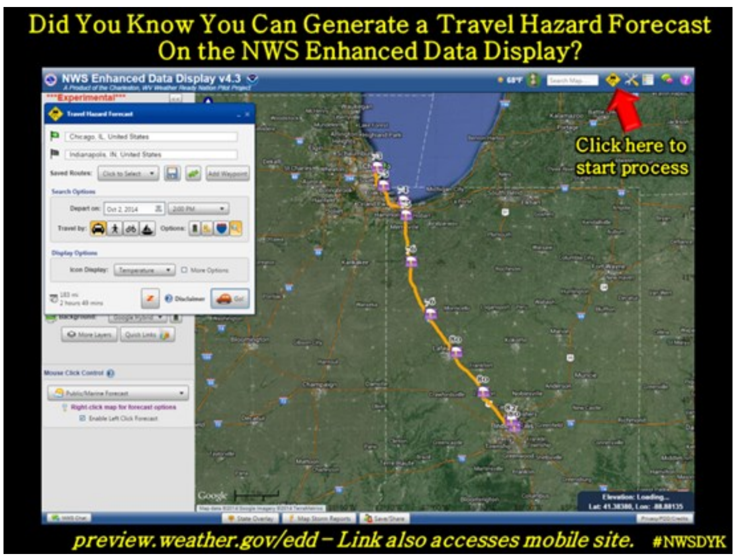
Did You Know Week was a weeklong event that occurred on NWS Chicago's Facebook and Twitter pages and many other NWS WFO and Regional Office social media pages (~60 pages actively created and shared content). During the week of October 5th, a series of posts/Tweets were created, informing the public and partners of NWS goals, services, and products, as well as general weather facts. Because NWS Chicago's social media platforms are a solid and consistent means for "virtual outreach", Did You Know Week supported current objectives and outreach, and continued work towards a better informed public and weather ready community.

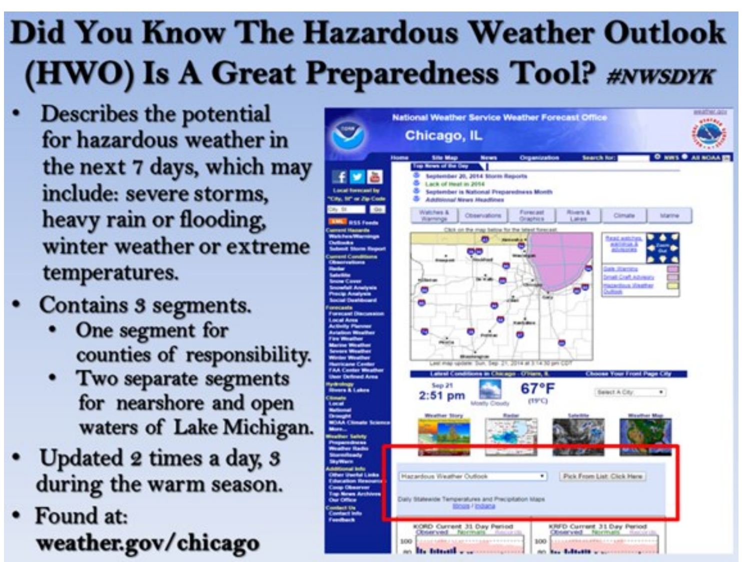
Some of the information which was shared by our office and many other NWS offices were:

- Did you know that NWS Chicago provides fire weather forecasts?
- Did you know NWS Chicago provides marine forecasts for nearly all of Lake Michigan?
- Did you know about the Storm Ready Program?
- Did you know that the NOAA Weather Radio can save lives?
- Did you know that radar is short for RAdio Detection And Ranging?
- Did You Know you can get river forecast information from our Advanced Hydrologic Prediction Service Page?
- Did You Know the Difference Between A Severe Weather Watch and Warning?
- Did you know the Hazardous Weather Outlook (HWO) is a great preparedness tool?

NWS Chicago Participates In National Weather Service Did You Know Week! (cont)







Skywarn Recognition Day

by Ben Deubelbeiss, Journeyman Forecaster

The National Weather Service (NWS) and the American Radio Relay League (ARRL) will celebrate the 16th annual SKYWARN Recognition Day on December 5th and 6th, 2014. Amateur Radio Operators (HAMs) will set up radio stations and for 24 hours try to make contacts with other NWS offices across the country, along with other HAM radio enthusiasts around the world. This annual event celebrates contributions that the amateur radio community and SKYWARN spotters make to NWS warning operations. If you'd like to become a licensed HAM operator or become active with a SKYWARN net, check out the ARRL website (www.arrl.org) and look for a radio club in your area. More information about our local amateur radio SKYWARN reporting procedures can be found on our website (www.crh.noaa.gov/lot/?n=am_radio). Details to register for this year's event will be posted to our webpage www.weather.gov/chicago at a later date.

Fall Word Search

FALL

F	H	H	E	V	Y	U	G	E	I	L	P	G	Y	K
S	J	O	E	T	Q	N	D	X	E	N	W	F	L	I
X	I	Y	M	V	A	I	I	A	Z	K	W	A	F	S
O	C	S	W	E	R	M	V	A	R	X	T	W	O	V
N	L	I	E	Y	C	E	I	X	R	S	K	L	O	U
I	O	S	A	H	S	O	Z	L	N	Q	S	L	T	B
U	U	H	L	M	T	G	M	R	C	T	L	Y	B	X
Q	D	Y	D	Z	V	N	O	I	I	Y	L	H	A	V
E	Y	Y	C	C	T	C	Y	C	N	K	A	P	L	J
E	R	I	F	N	O	B	E	S	A	G	F	O	L	V
F	I	E	L	D	M	A	Z	E	O	P	Q	R	X	N
M	P	U	M	P	K	I	N	L	A	T	P	O	M	E
T	S	O	R	F	T	C	C	E	V	K	O	L	P	O
T	Y	J	K	W	W	W	R	F	Y	F	G	H	E	E
D	X	Q	S	O	X	K	R	H	D	Q	L	C	P	S

APPLES
BONFIRE
CHLOROPHYLL
CLIMATE
CLOUDY
CORN STALK
EQUINOX
FALL
FIELD MAZE
FOOTBALL
FROST
HAYRIDE
HOMECOMING
LEAVES
PHOTOSYNTHESIS
PUMPKIN
RAINY
REAP
SOLSTICE