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Spring 2013

February 25, 2013 Blizzard

A historic blizzard struck the Panhandles during the early morning hours of Monday, February 25 and continued through the afternoon hours. A very intense upper-level disturbance produced a band of heavy snow that set up over the central Panhandles from roughly Amarillo to Borger to Perryton during the early morning hours on Monday. Within this band of snow, snowfall rates approached 2-3 inches per hour, thundersnow was observed, and extreme blizzard conditions were observed. As this band moved west to east during the morning hours, many locations from Hereford to Beaver received more than 10 inches of snow. The heavy snow and strong winds resulted in visibilities less than 50 feet at times for many of these locations. As a result, this crippled the entire area and made travel almost impossible. In fact, all roads in the Texas and Oklahoma Panhandles were closed, including Interstate 40 from the New Mexico border to the Oklahoma border and Interstate 27 from Amarillo to Lubbock. Conditions were so severe that Texas Department of Transportation crews were not able to work to keep the roads plowed. Rick Husband International Airport in Amarillo was shut down for most of the day. 19 inches of snow accumulated at NWS Amarillo along with a peak wind gust of 75 mph late Monday morning. A peak wind gust of 77 mph was also recorded at the Pantex Nuclear facility. Unfortunately, many motorists were also stranded.

...For More Information and Pictures turn to page 3...

Severe Weather Safety

By: Christine Krause, Forecaster

Spring is a season characterized by warmer temperatures. In turn, people get rejuvenated and ready for all the delights that warm weather affords us, especially after a long and cold winter. Springtime is also earmarked by wild swings in weather from warm and windy days, to cool evenings, to several rounds of thunderstorms. Thunderstorms are part of life in the Texas and Oklahoma Panhandles. In Amarillo, 87% of the annual rainfall is received from March through October, and almost all of this can be attributed to thunderstorms. Without this beneficial rain, the Panhandles would be a virtual desert.

...Severe Weather Safety continued on page 2...

Severe Weather Safety continued...

By: Christine Krause, Forecaster

However, when thunderstorms do occur there are many hazards that can damage property or threaten lives. It is important that everyone be aware of these hazards and know how to protect themselves and their property.

Lightning is a part of EVERY thunderstorm and often strikes without warning. Lightning kills dozens of people and injures hundreds more each year in the United States. Most deaths occur when people are caught outside with no shelter. It is important to remember that lightning can strike several miles away from the thunderstorm, so the best place to be is indoors. If you hear thunder, you are close enough to be struck by lightning and should seek shelter immediately!

Flooding causes more than 100 deaths each year in the United States and can occur almost anywhere. Most flood related deaths occur in automobiles. Even if you don't live near a river or stream, you can still be affected by flood waters. Flash flooding is an increased concern in the Texas and Oklahoma Panhandles during the summer months when thunderstorms produce very heavy rainfall in a short amount of time. Drainage systems may not be able to handle all the water at once and roads and underpasses can quickly flood. If you run across water covering the road, you should turn around and find an alternate route. It only takes a foot or two of water to cause your vehicle to stall or float.

Severe Thunderstorms can produce large hail and damaging straight line winds. A severe thunderstorm is defined as having hail one inch in diameter (the size of a quarter) or larger. (The straight line wind criterion of 58 mph or higher also defines a severe thunderstorm.) When severe thunderstorms approach, seek shelter in a sturdy building to avoid injury. Large hail can damage property and can cause injury to those caught outside. Strong straight line winds can occasionally exceed 100 mph and cause widespread damage equivalent to that of a tornado. These winds can destroy mobile homes and damage sturdy buildings.

Tornadoes are a very rare natural phenomenon associated with thunderstorms but occur in the Great Plains region of the United States more than anywhere else in the world. In the Texas and Oklahoma Panhandles, tornadoes are most common in late spring and early summer. The strongest tornadoes can produce some of the strongest winds ever recorded at the Earth's surface and completely destroy well-built structures. The best place to be during a tornado is in a basement or inside a small room inside a sturdy building and away from outside walls and windows. If caught outside with no shelter available, lie face down in a ditch or other low spot and cover your head.

The first step in protecting yourself and your property is to know when a severe thunderstorm or tornado is approaching. Understand the statements and warnings issued by the National Weather Service and have a reliable means of being alerted when these statements are issued. One of the best ways to make sure you know when a warning is issued is to have a NOAA All Hazards Weather Radio. These devices are inexpensive, are available at local electronic stores, and can be specially programmed to alert you when threatening weather is approaching.

WEATHER HAZARD	WATCH	WARNING
SEVERE THUNDERSTORM	Conditions are favorable for the development of severe thunderstorms in and close to the watch area.	Quarter size hail or winds greater than 58 mph is imminent or has been indicated by Doppler Radar or reported by storm spotters.
TORNADO	Conditions are favorable for the development of tornadoes in and close to the watch area.	A tornado is imminent or has been indicated by Doppler Radar or reported by storm spotters.
FLASH FLOOD or FLOOD	Conditions are favorable for flash flooding	Flash flooding or flooding is imminent

The National Severe Storms Laboratory (NSSL) needs YOUR help with a research project!

If you live in the continental United States, the Precipitation Identification Near the Ground project (PING) wants YOU to watch and report on precipitation type.

PING is looking for young, old, and in-between volunteers to make observations—teachers, classes and families too! We have collected tens of thousands of observations since 2006, already making PING successful because of your help.

PING volunteers can spend a little or a lot of time making observations. The basic idea is simple: [NSSL](#) will collect radar data from NEXRAD radars in your area during storm events, and compare that data with YOUR observations.

Why? Because the radars cannot see close to the ground, we need YOU to tell us what is happening.

Are snowflakes falling on your head? Are you getting pinged by hail? Tell us where you are and what is hitting the ground. NSSL scientists will compare your report with what the radar has detected, and develop new radar technologies and techniques to determine what kind of precipitation—such as snow, soft hail, hard hail, or rain—is falling where.

The report is easy! You can use our FREE mobile apps, or make your report from [this website](#) by clicking on either the "Report Hail" button (to report hail), or the "Report Winter Weather" button (for snow, sleet, or freezing rain and mixtures of these). There is no commitment, and no minimum amount of reports. You can also view reports made by others across the country in the mobile app or at [this website](#)



Please note: While these data are important, safety is absolutely essential. Please read the safety tips [here](#).

Basics of El Niño and La Niña

El Nino and La Nina get talked about a lot in the Panhandles due the variability in weather that each one brings. But what exactly are El Nino and La Nina, and how do they affect weather patterns around the world? The next two pages present information from the [Climate Prediction Center](#) about El Nino and La Nina. If you are curious as to how El Nino and La Nina affect the Texas and Oklahoma Panhandles specifically, click the following link to find out more information:

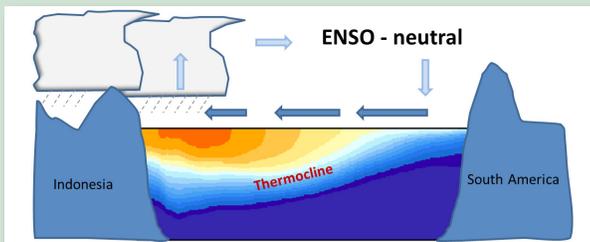
<http://www.srh.noaa.gov/ama/?n=elnino>

WHAT IS EL NIÑO AND LA NIÑA?

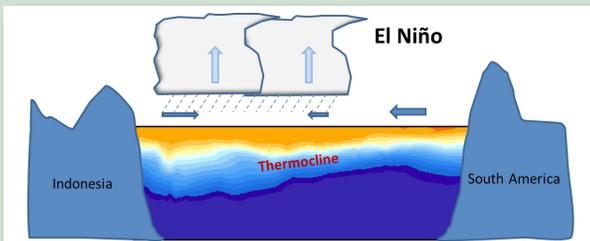
The El Niño – Southern Oscillation (ENSO) is a recurring climate pattern involving changes in the temperature of waters in the central and eastern tropical Pacific Ocean and the patterns of sea level pressure, lower- and upper-level winds, and tropical rainfall across the Pacific basin. On periods ranging from about two to seven years, the surface waters across a large swath of the tropical Pacific Ocean warm or cool by anywhere from 1°C to 3°C, compared to normal. This irregular oscillation between warm and cool patterns, referred to as the ENSO cycle, directly affects rainfall distribution in the tropics and can have a strong influence on weather across the United States and other parts of the world. **El Niño** and **La Niña** are the extreme phases of the ENSO cycle; between these two phases is a third phase called **ENSO-neutral**.

ENSO PHASES

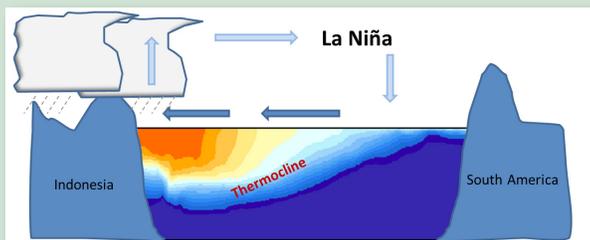
ENSO-neutral: Normally, strong trade winds blow from the east along the equator, pushing warm water into the western Pacific Ocean.



El Niño conditions occur when abnormally warm waters accumulate in tropical latitudes of the central and eastern Pacific Ocean associated with a weakening of the low-level easterly winds. Consequently, tropical rains that usually fall over Indonesia shift eastward.



La Niña conditions occur when cooler-than-average waters accumulate in the central and eastern tropical Pacific, associated with a strengthening of the low-level easterly winds over the central tropical Pacific. Heavy rainfall occurs over Indonesia and Malaysia.



The **Thermocline** is a layer of water in which there is an abrupt change in temperature separating the warmer surface water from the colder deep water.

Source: NOAA/CPC

HOW DO WE TELL WHAT PHASE ENSO IS IN?

NOAA's Climate Prediction Center has determined the average monthly sea surface temperature for a particular swath [5°N-5°S, 170°W-120°W] of the tropical Pacific Ocean by averaging measurements collected there over the 30-year period 1981-2010. Scientists refer to that swath as the Niño 3.4 region. The observed difference from the average temperature in that region—whether warmer or cooler—is used to indicate the current phase of ENSO.



Source: Climate.gov

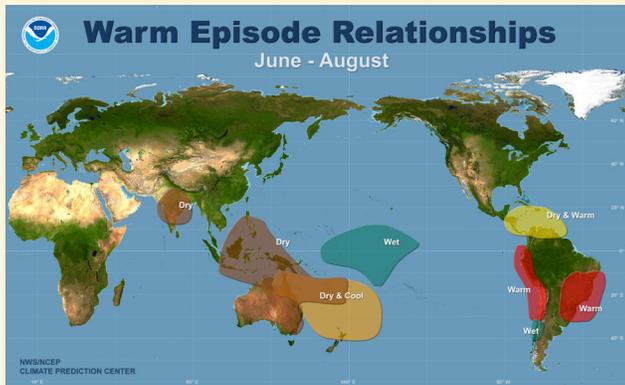
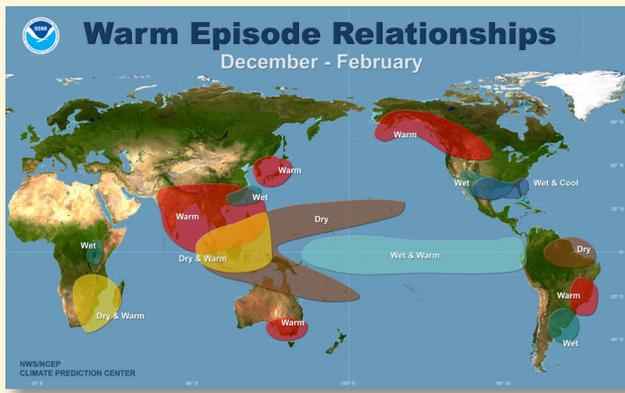
ENSO INDEX:

Average sea surface temperature in the Niño 3.4 region is calculated for each month, and then averaged with values from the previous month and following month. This running three-month average value is compared with average sea surface temperature for the same three months during 1981 – 2010. The departure from the 30-year average of the three-month average is known as the Oceanic Niño Index or ONI.

- **El Niño** is characterized by a positive ONI greater than or equal to +0.5°C.
- **La Niña** is characterized by a negative ONI less than or equal to -0.5°C.
- Whenever the ONI is between +0.5 and -0.5, conditions are referred to as **ENSO-neutral**.

ENSO GLOBAL IMPACTS

El Niño



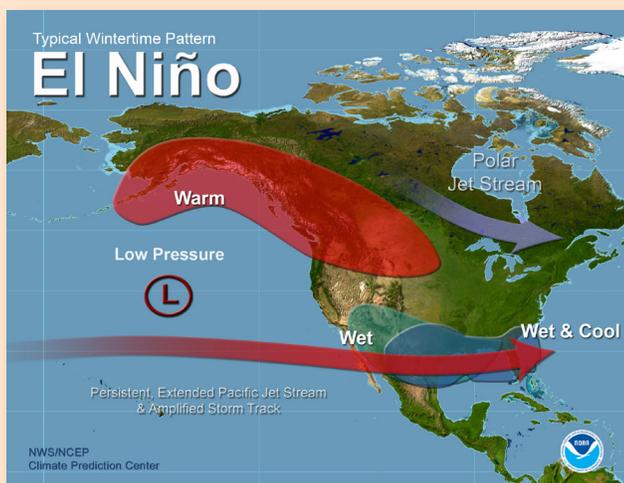
La Niña



IMPACTS IN THE UNITED STATES DURING WINTER

El Niño episodes feature an equatorward-shifted, stronger-than-normal jet stream and wetter-than-average conditions across the southern part of the United States, and less storminess and milder-than-average conditions across the North.

La Niña episodes feature a wave-like jet stream flow over the United States and Canada, with colder and stormier than average conditions across the North, and warmer and less stormy conditions across the South.



REAL-TIME MONITORING

Oceanic and atmospheric conditions are updated weekly on the Climate Prediction Center (CPC) webpage: www.cpc.noaa.gov

Forecasts for the evolution of **El Niño/La Niña** are updated monthly in the Forecast Forum section of CPC's Climate Diagnostics Bulletin (www.cpc.ncep.noaa.gov/products/CDB)

A monthly ENSO Diagnostics Discussion is also available on the CPC webpage. To receive an e-mail notification when the monthly ENSO Diagnostic Discussions are released, send an e-mail message to: ncep.list.ens-update@noaa.gov



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weather.gov/ama



Jose Garcia, John Harris, Steve Kersh, and Dave Oliver talk at the 2013 Severe Weather Workshop. They took questions from the audience and gave insight into what attracted each of them to the field of meteorology.