

## Report on 90-day Weather Projection for the Northern Half of New Mexico

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### Introduction:

This is the latest 90-day weather forecast for the northern half of New Mexico. The forecast area covers a region bounded by the state borders on the north, west, and east, and Interstate 40 on the south.

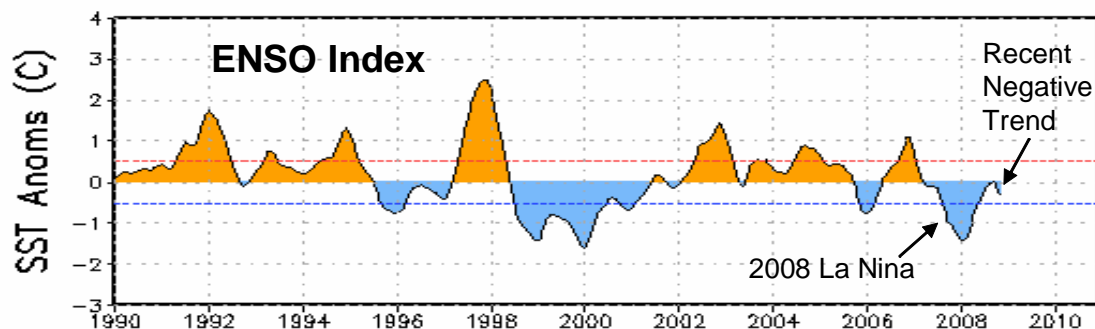
The report contains a summary weather outlook for February through April (directly below), a brief review of the current El Niño Southern Oscillation (ENSO) condition, an overview of current weather trends, and an update about the Pacific Decadal Oscillation, which was discussed in the November and December reports and may be contributing to the dry and warm weather pattern that is forecast.

### Summary, Ninety-day weather outlook for forecast area:

- *A La Nina has not been officially declared, although the current trend is in that direction. Long-range computer models are uncertain about whether an official La Nina will develop in the next six months.*
- *However, the atmosphere is behaving as though a moderate La Nina condition exists and it is expected to create below normal precipitation and much higher than normal temperatures over the forecast area in the next 90 days.*
- *The Pacific Decadal Oscillation (PDO) is showing a decided negative trend and it may be exacerbating the dry and warm weather in most of northern NM. The PDO is a reflection of temperature conditions for northern Pacific waters and it is believed that cooling water will suppress precipitation in the SW US.*
- *Except for a small area around Chama, precipitation in the forecast area has been below average over the past 30 days. Temperatures have been well above normal in the same period.*

### Review of Current El Niño Southern Oscillation Situation and Discussion:

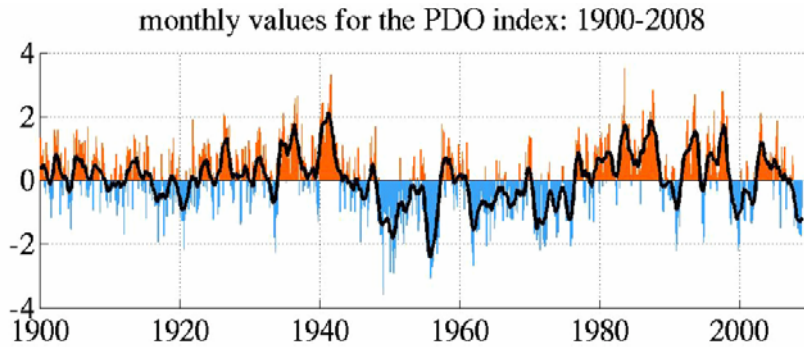
The Historic Oceanic Niño Index, which is the official metric from which a La Niña or El Niño is declared, is at  $-0.3^{\circ}\text{C}$ , a change toward a La Niña condition but it is still considered to be neutral. To be declared an official La Niña, the 3-month moving average index must be greater than  $-0.5^{\circ}\text{C}$  for five consecutive averaging periods. The graphic below (from Climate Prediction Center) shows the history of the Niño Index.



Computer models are uncertain about whether an official La Nina will develop in the next six months. All of the models predict cooling conditions in the Nino area of the Pacific this spring, with a return to fully neutral conditions by summer.

Regardless of the ENSO index value, the part of the atmosphere that is believed to control our weather is behaving as though a mild La Nina condition exists. Normally, neutral ENSO condition, as currently exist, would have minimal effect on precipitation and temperature patterns in the SW US. But computerized atmospheric models continue to forecast dryer and warmer than normal conditions in the forecast area.

Many climatologists within the National Oceanic and Atmospheric Administration are suspecting that the Pacific Decadal Oscillation (PDO) is becoming a factor in this drying trend.

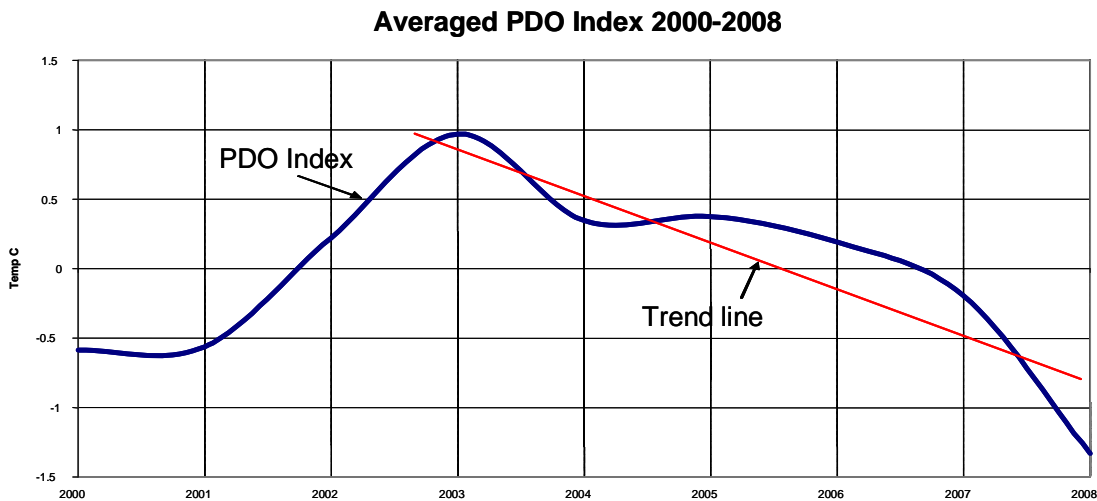


The PDO is a measure of northern Pacific sea surface temperatures and this temperature is cyclic, just as in the Nino waters, but its frequency is measured in decades rather than months. Ocean cooling in the PDO

area is thought to be associated with abnormally dry and warm weather in the SW US.

The black line in the chart above shows the long history of the PDO. There is a rough correlation between negative PDO indexes with the drought period in the 1950s and early 1960s and positive indexes with the wetter period of the 1980s and early 1990s.

The chart below shows a more detailed view of the PDO index since 2000 with a trend line showing a decidedly negative inclination.



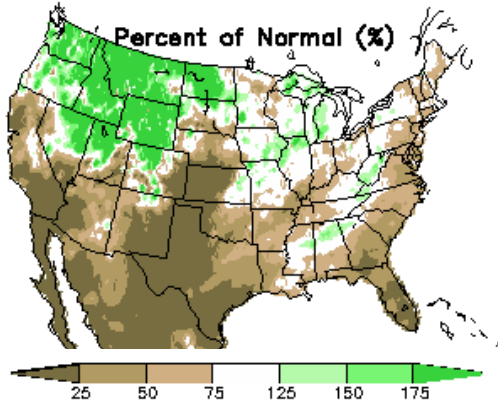
This is evidence that ENSO may not be the only controlling entity for our weather. However, an accepted explanation of *how* the PDO might physically affect the weather in the SW US is being developed. Until the work is further along, a firm inference cannot

be made. In simple terms, the PDO looks to be a factor in our weather, but until we understand how it might actually work, we can only suspect that it is so.

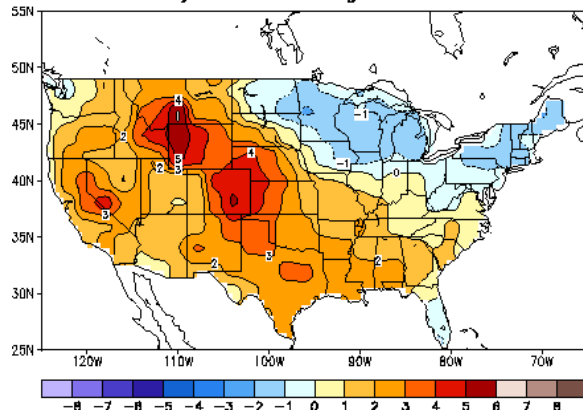
Current Weather Trends.

The maps below (from National Climate Prediction Center) shows the precipitation and

**30-day (ending 25 Jan 2009) % of average precipitation**



**30-day (ending 24 Jan 2009) temperature departures (degree C)**



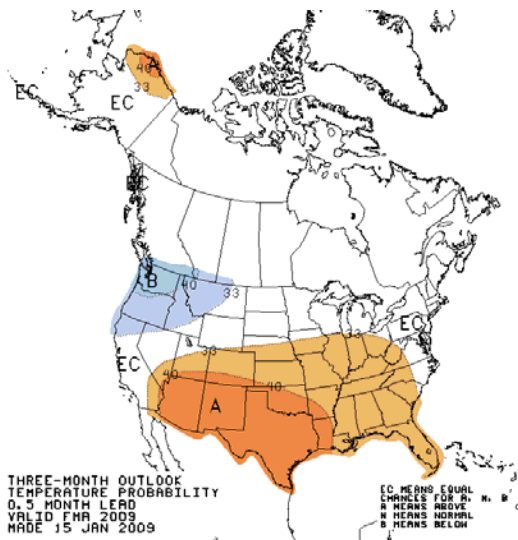
temperature conditions in the forecast area over the past month. It has generally been dryer and much warmer than normal. This warming trend is obvious to most outdoor folks, especially snowshoers and skiers who are witnessing a snow pack that is sometimes softening and melting as it usually does in late February and March.

Next 90 days.

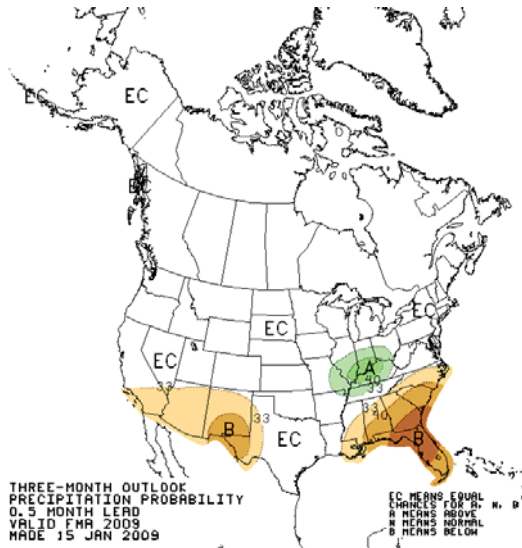
The expectation for the next 90 days is shown in the dual maps below (from the National Climate Prediction Center). The models are predicting a continuation of current trends.

**Outlook for Feb Through Apr 09**

**Temperature**



**Precipitation**



### Recent Weather Trends

The recent weather has shown a preponderance of high pressure ridges that weaken or block the moisture laden storms that attempt to invade the forecast area. These storms originate in the Aleutian Island area and mid-latitude Pacific regions. They then move easterly, following roughly the path of the Polar Jet Stream. The Jet Stream moves northward under high pressure, and when NM is under a high-pressure ridge, storms are ushered north and around the state.

Yesterday, a weakened storm system entered the area with moisture. It dropped some snow and delivered cold conditions, which will help preserve the snow pack. Preliminary reports indicate that not much beneficial moisture was received. Hopefully we will get a few more of these storms to occasionally create a semblance of normal winter weather.

### Follow-up reports:

The next report is scheduled for late February.