

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 January through March (directly below), a brief review of the current El Nino Southern Oscillation (ENSO) condition, an overview of current weather trends, and a brief discussion about the Pacific Decadal Oscillation, which was discussed in the November report and which could be confounding long-range forecasts.

Summary, Ninety-day weather outlook for forecast area:

- *ENSO neutral conditions (neither La Nina nor El Nino) prevail, although recent measures indicate a slight movement toward a La Nina condition. Models indicate that within the next six months there is a 50% chance that ENSO will remain neutral and a 50% chance of redeveloping a La Nina condition.*
- *Although the ENSO index is solidly neutral, the atmosphere is behaving as though a La Nina condition exists. The Pacific Decadal Oscillation (PDO) may be the cause. The PDO is similar to ENSO in that it affects the weather in North America. The differences are that it affects the northern Pacific ocean rather than the tropical areas and its oscillation frequency (hot to cold) is measured in years instead of months*
- *The 90 day outlook for the forecast area is for higher than normal temperatures and slightly below normal precipitation.*
- *Precipitation in the forecast area has been about average to above average over the past 30 days. Temperatures have been several degrees above normal in the same period.*

Review of Current El Nino Southern Oscillation Situation and Discussion:

The Historic Oceanic Nino Index, which is the official metric from which a La Nina or El Nino is declared, is at -0.1C, a slight change toward a La Nina but is still considered to be solidly neutral. To be declared an official La Nina, the 3-month moving average index must be greater than -0.5C for five consecutive averaging periods. We are a long way from that situation.

The graph below (from the International Research Institute) shows the results from the various models that are used to predict the average Oceanic Nino Index over consecutive 3-month moving average periods. An ENSO neutral condition is the area between the dashed red lines. About half predict the neutral conditions to continue though the spring.

The other models suggest a La Nina conditions will develop. By late summer 2009 most of the models predict ENSO neutral conditions.

It is noteworthy that only a few of the models are predicting La Nina conditions to prevail for a sufficient duration to create a new official La Nina.

In spite of the ENSO neutral conditions, recently the part of the atmosphere that is believed to control our weather has begun to behave as though a La Nina condition exists. Under the current neutral ENSO condition more normal precipitation and temperature patterns

might be expected in the SW US. But precipitation and temperature models continue to forecast dryer and warmer than normal conditions in the forecast area.

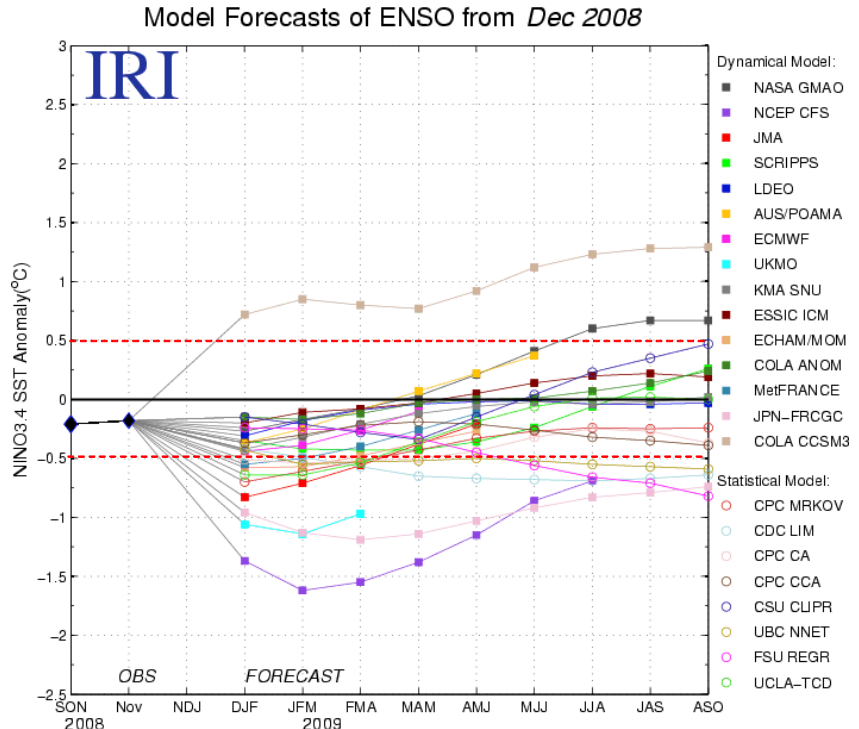
Some believe this situation may be caused by the Pacific Decadal Oscillation (PDO), which is creating cool ocean conditions in the Northern Pacific. The PDO's cyclic frequency is measured in decades. Ocean cooling in this area is expected to cause abnormally dry and warm weather in the SW US.

In other words, ENSO may not be the only controlling entity for our weather. However, so little is known about the PDO that it is almost speculative to claim that it is responsible for the current atmospheric conditions.

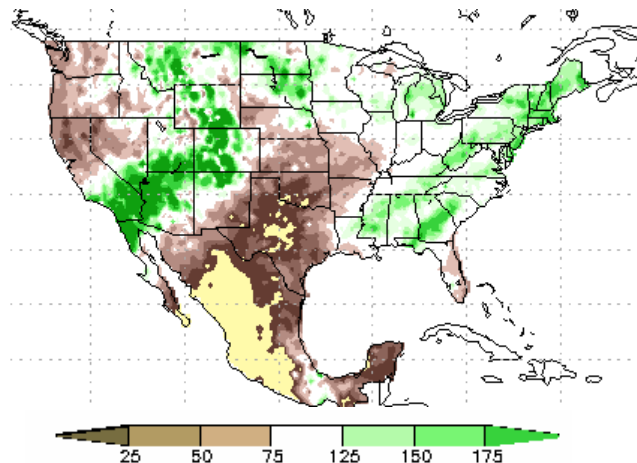
Also, its interaction with ENSO relative to the weather in the forecast area is not understood. But it does appear to explain why the ENSO is neutral yet the atmosphere is acting like a La Nina exists.

Current Weather Trends.

Over the past 30 days precipitation conditions in the forecast area have been average to above average. What had begun as a very dry autumn has given way to an active pattern in which the forecast area has been in the low pressure regions of the polar jet stream.



**% of Normal Precipitation
Mid Nov to Mid Dec 2008**

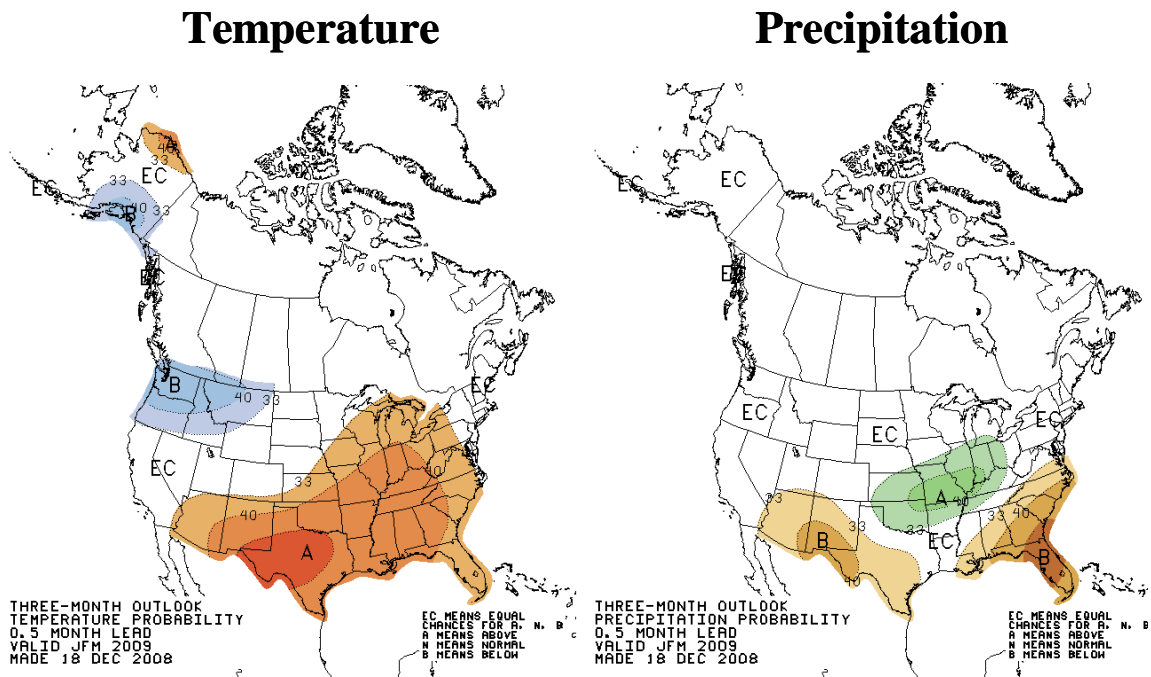


Thus, storms have been ushered into the area and some have carried substantial moisture with them. The map above (from National Climate Prediction Center) shows the precipitation pattern for the forecast area over the past 30 days.

Temperatures have been around four degrees above normal in most of the forecast area.

Next 90 days.

The expectation for the next 90 days is shown in the dual maps below. The models are predicting abnormally dry and warm conditions.



However, the current weather trend appears to be headed towards normalcy. Recent storms have dropped beneficial amounts of snow and rain in the northern mountains.

Last year these same models continued to predict dryer than normal conditions as much of the forecast area was experiencing record snowfalls. Obviously, long-range weather forecasting is an inaccurate science and the predictions should be used with caution.

Follow-up reports:

The next report is scheduled for late January.