

**Latest on ENSO
and the
September-October-November
2011
Outlook for Colorado**

Mike Baker
National Weather Service
Boulder, Colorado
August 23, 2011

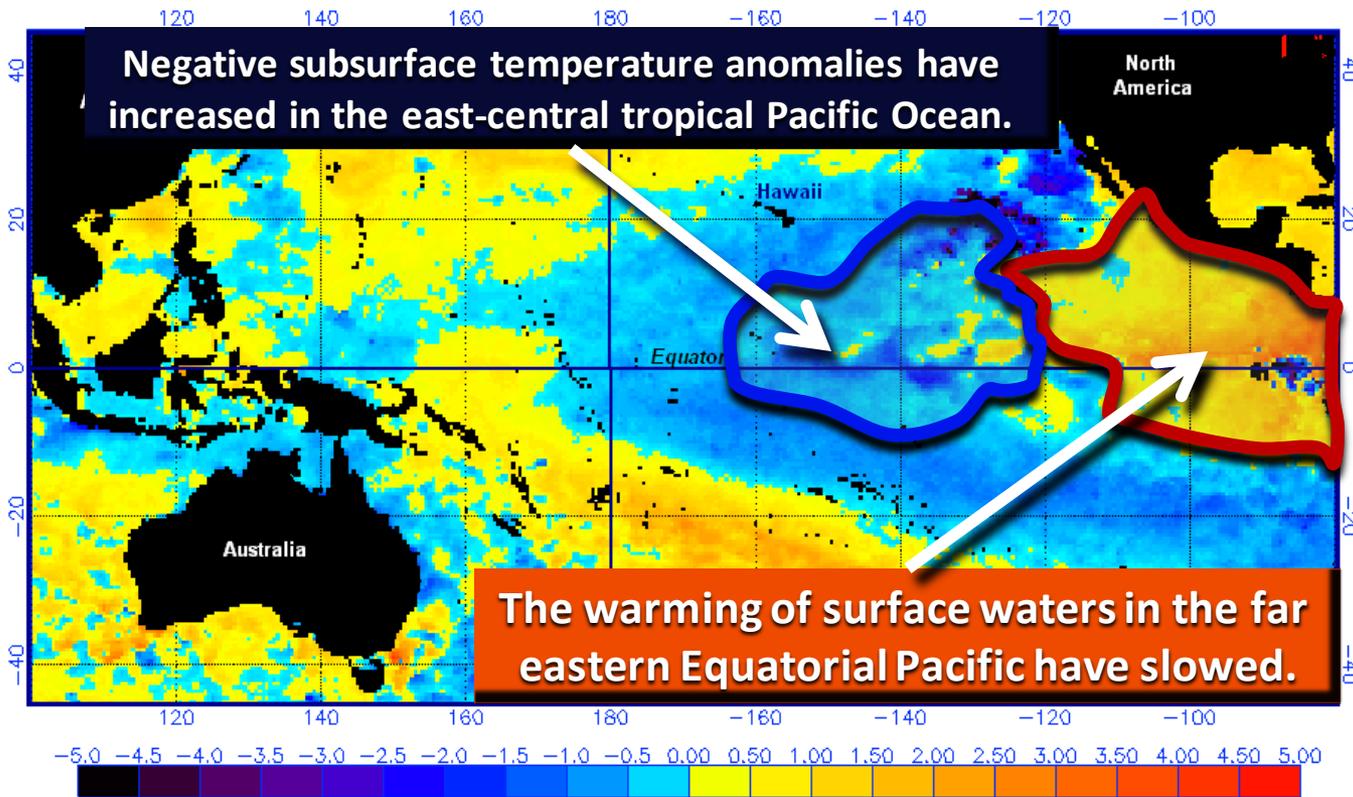


Topics Covered

- Update on ENSO (El Niño/Southern Oscillation) – and the latest ENSO forecast for the next 12 months
- Precipitation, temperature and drought conditions observed across Colorado during the 90-day period ending August 18, 2011
- The latest drought outlook for Colorado from the U.S. Drought Monitor issued August 18, 2011
- The latest temperature and precipitation outlooks for Colorado from NOAA's Climate Prediction Center (CPC) for the climate season September-October-November of 2011
- Finally, a historical look at temperature and precipitation across Colorado during ENSO-neutral and La Niña conditions for the period September-November using whicker composite plots prepared by CPC.

La Niña Returns, Perhaps

NOAA/NESDIS SST ANOMALY (degrees C), August 18, 2011

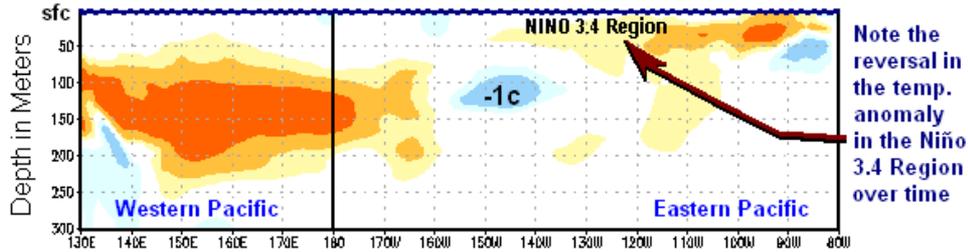


Sea surface temperatures (SST) have remained very close to climatological mean values along the Equator in the Pacific Ocean during the past few weeks. The weakly positive SST anomalies in far eastern tropical Pacific have continued to shrink in coverage.

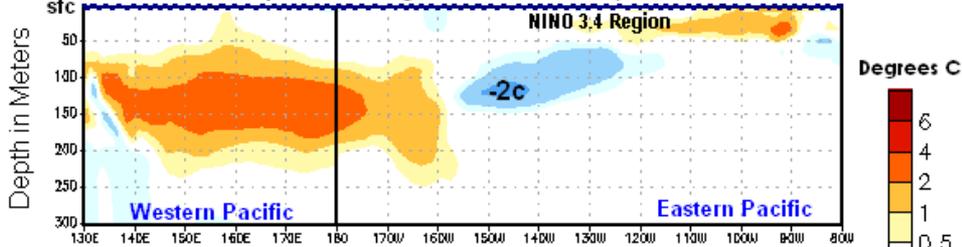
However, surface and subsurface water temperatures are becoming increasingly negative in the east-central tropical Pacific Ocean during the same period; perhaps a prelude to another **La Niña**.

Subsurface Temperature Anomalies (in Deg C) on the Equator in the Pacific Ocean

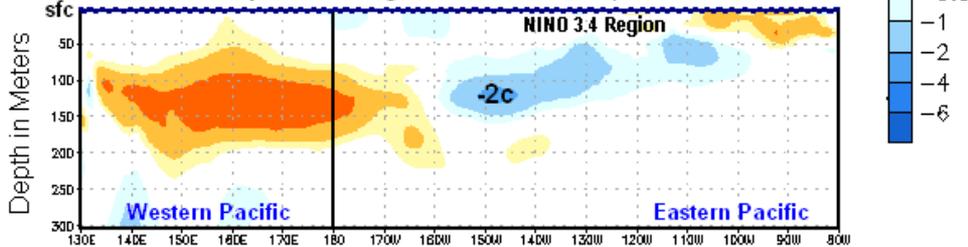
Three-pentad average centered on 22 June 2011



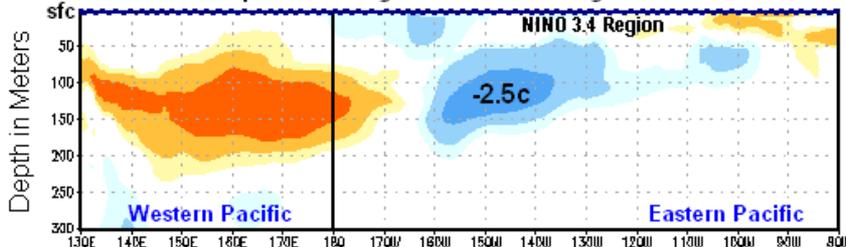
Three-pentad average centered on 7 July 2011



Three-pentad average centered on 22 July 2011



Three-pentad average centered on 8 August 2011



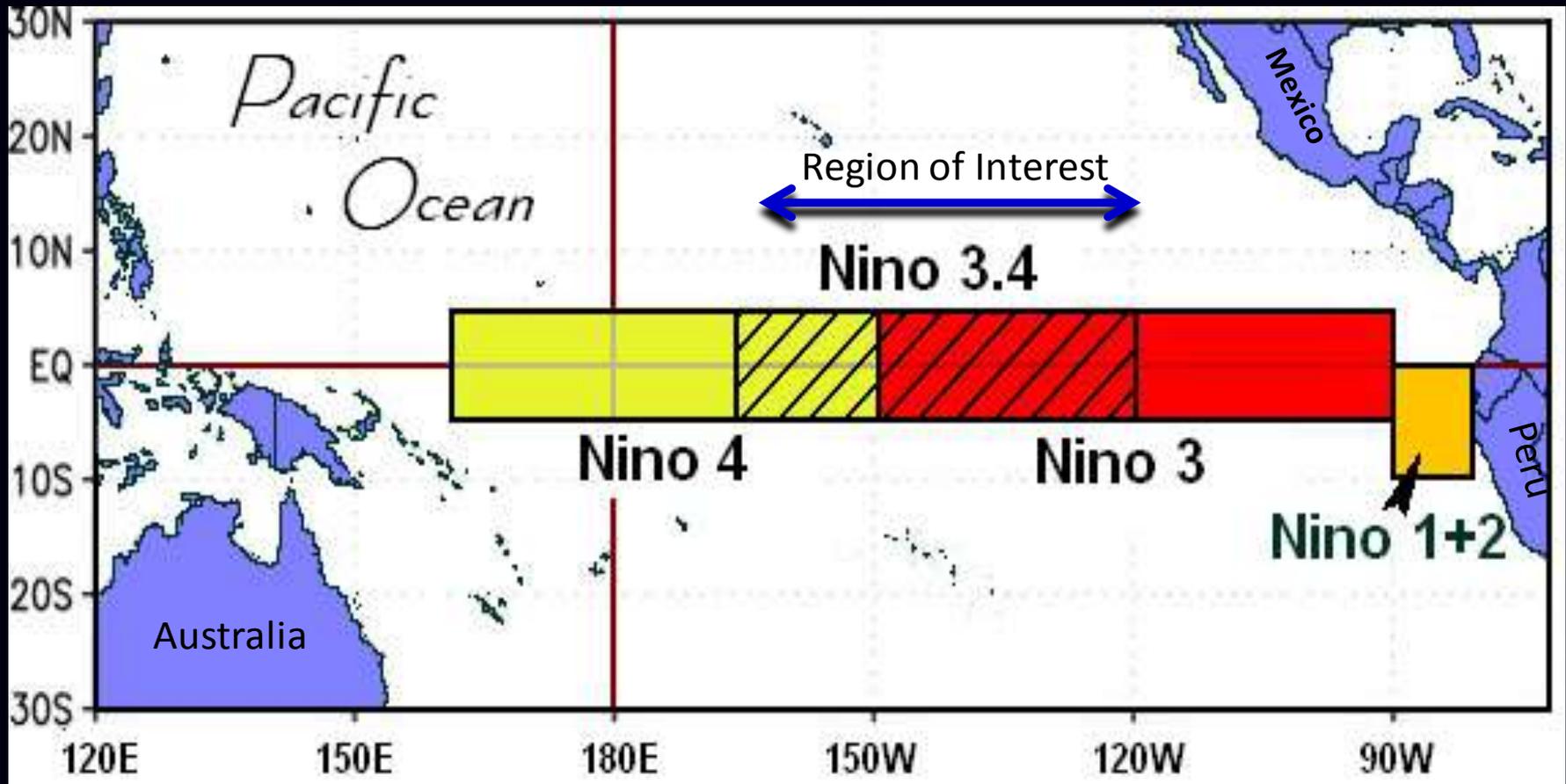
TIME



Since late June, negative surface and subsurface temperature anomalies have appeared and continued to increase in the east-central Equatorial Pacific Ocean.

This cooling trend and the depth at which this anomalous cooling was occurring is one indication that La Niña conditions may be returning to the Pacific Ocean.

Niño Regions in the Equatorial Pacific Ocean



Niño 3.4 – The principal region in the eastern Equatorial Pacific Ocean used by the Climate Prediction Center (CPC) for monitoring, assessing and predicting ENSO (hatched region on the above map) .

ENSO-Neutral Condition Dominate

Year	DJF	JFM	FMA	MAM	AMJ	MJJ	JJA	JAS	ASO	SON	OND	NDJ
2000	-1.6	-1.4	-1.0	-0.8	-0.6	-0.5	-0.4	-0.4	-0.4	-0.5	-0.6	-0.7
2001	-0.6	-0.5	-0.4	-0.2	-0.1	0.1	0.2	0.2	0.1	0	-0.1	-0.1
2002	-0.1	0.1	0.2	0.4	0.7	0.8	0.9	1.0	1.1	1.3	1.5	1.4
2003	1.2	0.9	0.5	0.1	-0.1	0.1	0.4	0.5	0.6	0.5	0.6	0.4
2004	0.4	0.3	0.2	0.2	0.3	0.5	0.7	0.8	0.9	0.8	0.8	0.8
2005	0.7	0.5	0.4	0.4	0.4	0.4	0.4	0.3	0.2	-0.1	-0.4	-0.7
2006	-0.7	-0.6	-0.4	-0.1	0.1	0.2	0.3	0.5	0.6	0.9	1.1	1.1
2007	0.8	0.4	0.1	-0.1	-0.1	-0.1	-0.1	-0.4	-0.7	-1.0	-1.1	-1.3
2008	-1.4	-1.4	-1.1	-0.8	-0.6	-0.4	-0.1	0	0	0	-0.3	-0.6
2009	-0.8	-0.7	-0.5	-0.1	0.2	0.6	0.7	0.8	0.9	1.2	1.5	1.8
2010	1.7	1.5	1.2	0.8	0.3	-0.2	-0.6	-1.0	-1.3	-1.4	-1.4	-1.4
2011	-1.3	-1.2	-0.9	-0.6	-0.2	0.0						

← Latest ONI

El Niños (warm phase events): ONI of +0.5 and higher (red numbers)
 La Niñas (cold phase events): ONI of -0.5 and lower (blue numbers)
 ENSO-Neutral (near average conditions): ONI below 0.5 and above -0.5 (black numbers)

The latest ONI of -0.2 in Niño 3.4 during the three-month climate season April-May-June of 2011 is an indication of ENSO-neutral conditions.

Oceanic Niño Index - ONI

The ONI is based on sea surface temperature (SST) departures from average in the Niño 3.4 region of the eastern tropical Pacific and is a principal measure for monitoring, assessing and predicting ENSO.

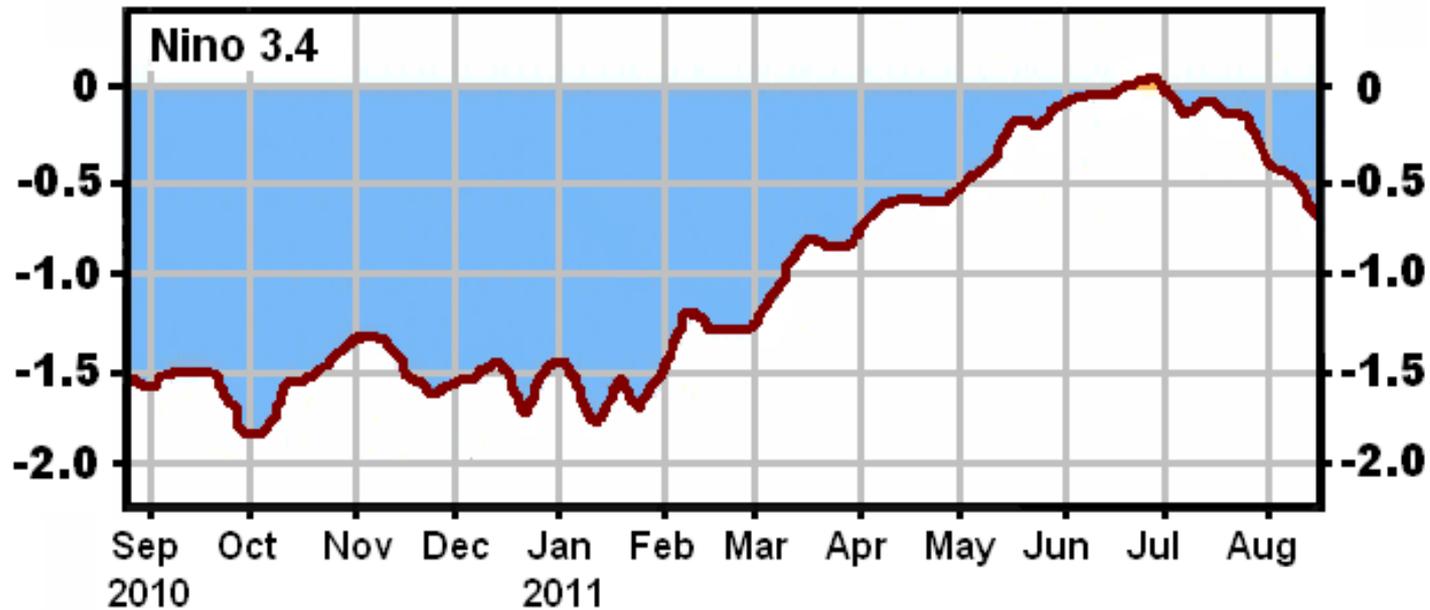
ONI is defined as the three-month running-mean SST departures in the Niño 3.4 region.

ONI is used to place current ENSO and non-ENSO events into a historical perspective.

NOAA's operational definitions of El Niño and La Niña are keyed to the ONI index.

NOAA/CPC Aug 03 2011

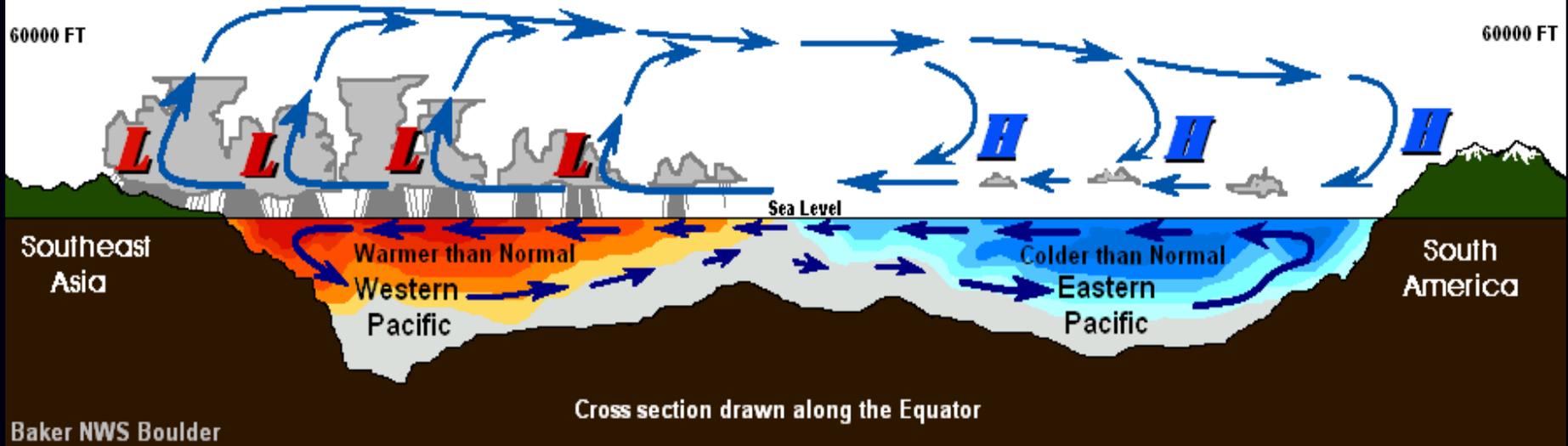
**Sea Surface Temperature Anomaly for Pacific Region Niño 3.4
the Week of August 15, 2011**
Temperatures in Degrees Celcius



NOAA/CPC

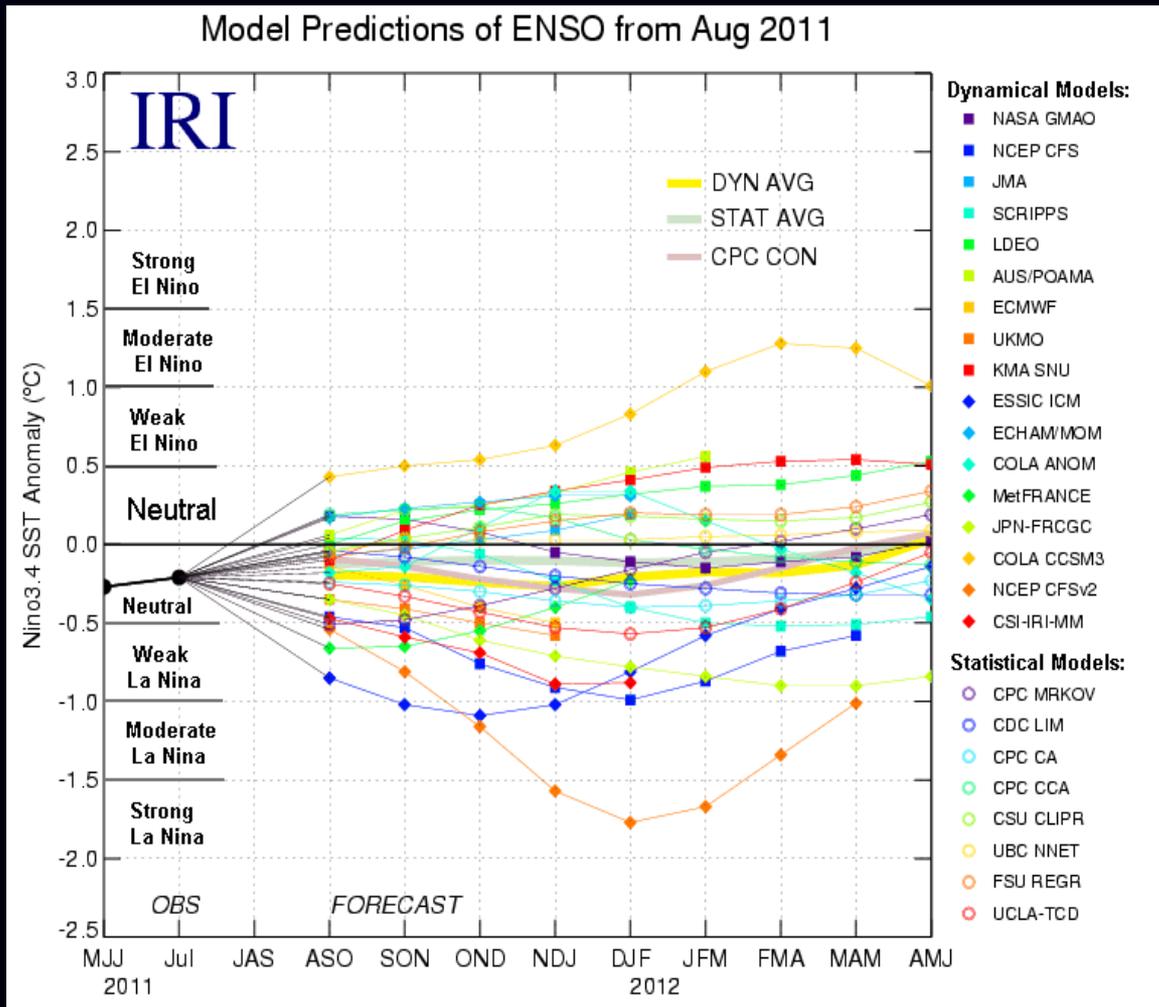
The weekly SST departure for Niño 3.4 for the week of August 15, 2011 was -0.7 degrees Celsius. This is sharply down from the weekly anomaly value of 0 degrees Celsius at the start of July 2011.

La Niña Conditions in the Tropical Pacific Ocean



During La Niña episodes, surface and subsurface water temperatures run colder than normal in the eastern tropical Pacific and anomalously warm in the western tropical Pacific. At the same time, colder subsurface water upwells (ascends) along the northwest coast of South America while very warm surface water downwells (descends) along the east coasts of southeast Asia and Indonesia. This vertical displacement of water along these coasts coincides with the westerly movement of surface water across the Equatorial Pacific. Above the abnormally warm waters of the western Pacific, convection (i.e., thunderstorms) is enhanced resulting in greater than average precipitation in this region. Over the abnormally cold waters of the eastern Pacific, a subsiding (sinking) atmosphere suppresses convection typically resulting in abnormally warm and dry conditions.

Model Predictions for El Niño/Southern Oscillation (ENSO) Through April-May-June of 2012



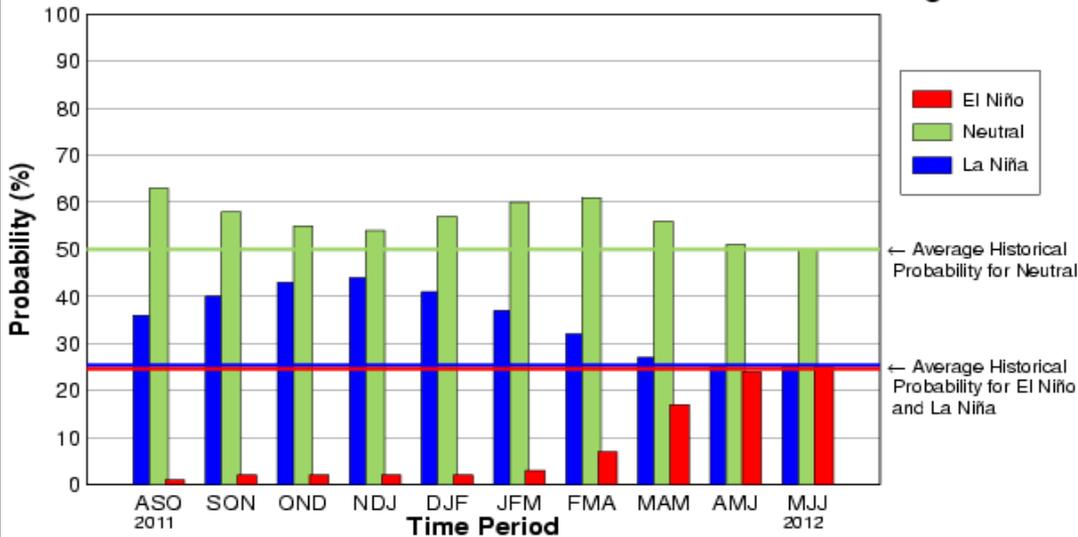
An average of all dynamical and statistical ENSO models indicate a continuation of ENSO-neutral conditions through the winter of 2011-2012. However, as of early August, global atmospheric circulation continued to exhibit traits of weak La Niña conditions.

The latest ENSO model forecasts, including NCEP's CFS dynamical forecast, have trended towards weak La Niña conditions by this fall and a heightened probability that these conditions will exist during the 2011-2012 winter season.

A few models go as far as predicting a moderate to strong La Niña for the upcoming winter season.

Source: International Research Institute for Climate and Society (IRI) – Issued on 8/18/11

IRI Probabilistic ENSO Forecast for NINO3.4 Region



IRI Probabilistic ENSO Prediction for NINO 3.4 Region by 3-Month Season through May-June-July of 2012

SEASON	LA NINA	NEUTRAL	EL NINO
AUG-SEP-OCT 2011	36%	63%	1%
SEP-OCT-NOV 2011	40%	58%	2%
OCT-NOV-DEC 2011	43%	55%	2%
NOV-DEC-JAN 2012	44%	54%	2%
DEC-JAN-FEB 2012	41%	57%	2%
JAN-FEB-MAR 2012	37%	60%	3%
FEB-MAR-APR 2012	32%	61%	7%
MAR-APR-MAY 2012	27%	56%	17%
APR-MAY-JUN 2012	25%	51%	24%
MAY-JUN-JUL 2012	25%	50%	25%

Made in August 2011

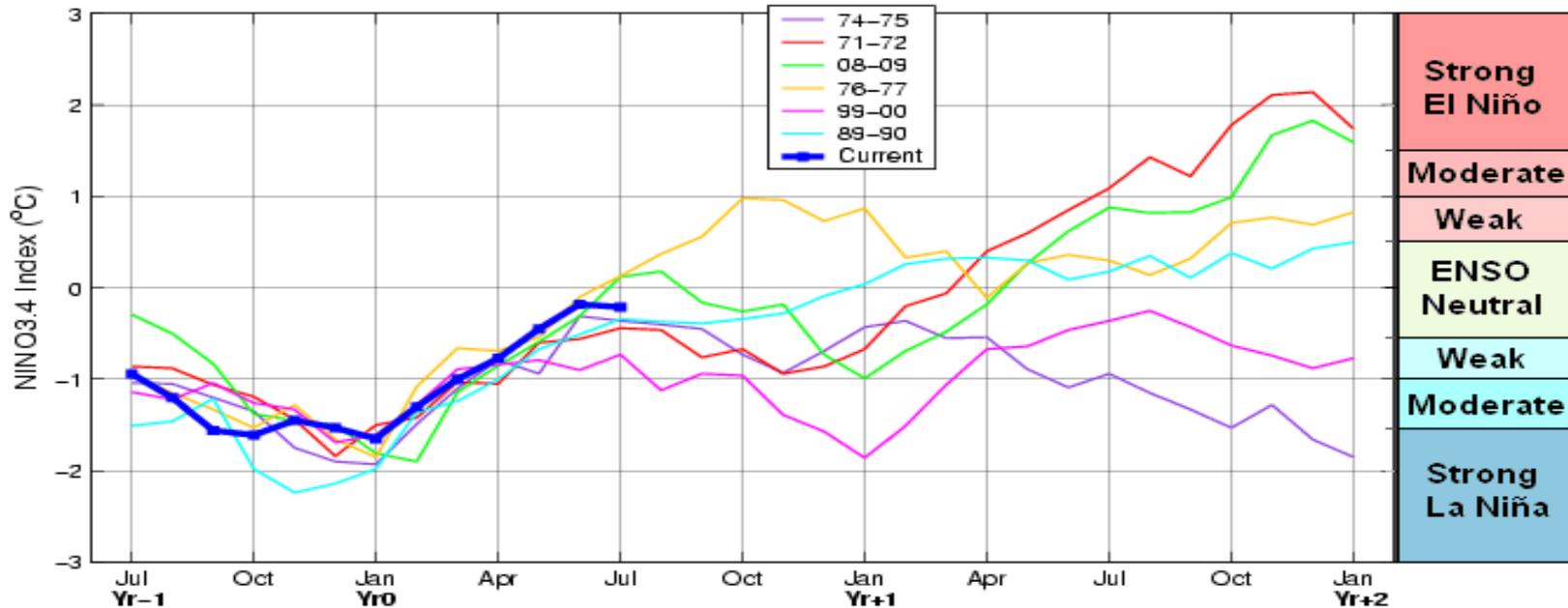
The probabilistic forecast from IRI now indicates a 57 percent chance that ENSO-neutral conditions will prevail during the Dec-Jan-Feb 2012 winter season. That is down from a 60 percent chance offered by last month's forecast.

Whereas the chance for La Niña conditions has increased from 25 to 44 percent for the 3-month period Nov-Dec-Jan, and from 25 to 41 percent for the period Dec-Jan-Feb 2012.

The probability that El Niño conditions will develop remains quite low.

Source: International Research Institute for Climate and Society (IRI)
– Issued on 8/18/11

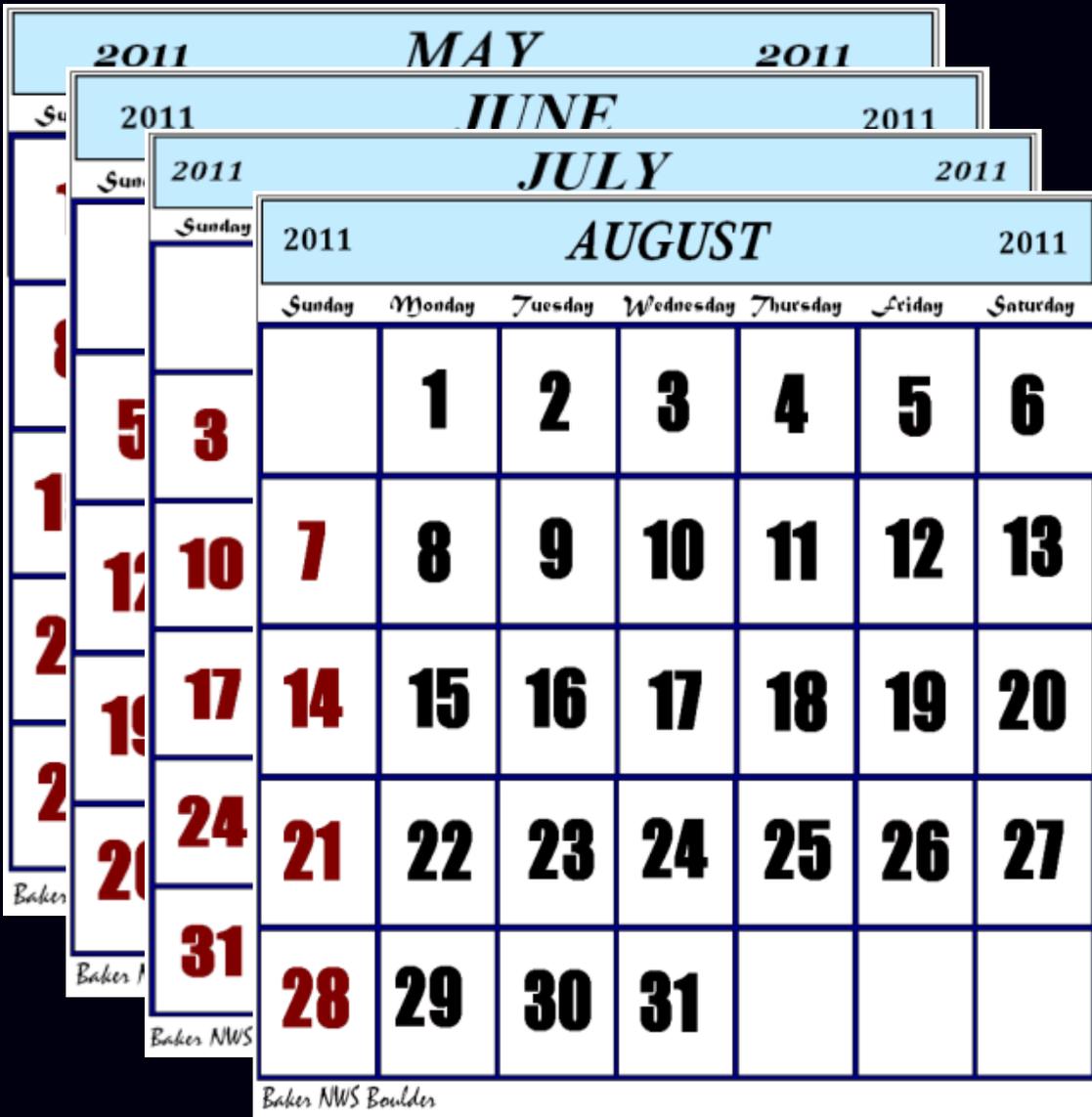
A Comparison of the Seven Strongest La Niña Events Since 1970 Current vs. Past Niño3.4 Indices (°C)



Source: The International Research Institute for Climate and Society -IRI - August 2011

Above is a comparison of Niño 3.4 indices for the seven strongest La Niña events since 1970. All seven events were classified as weak by April of the following spring, and a majority of those ended by the start of summer. The current Niño 3.4 index (thick blue line) peaked in late June as did many of its predecessors. A majority of these indices either leveled out or decreased slightly during the subsequent summer.

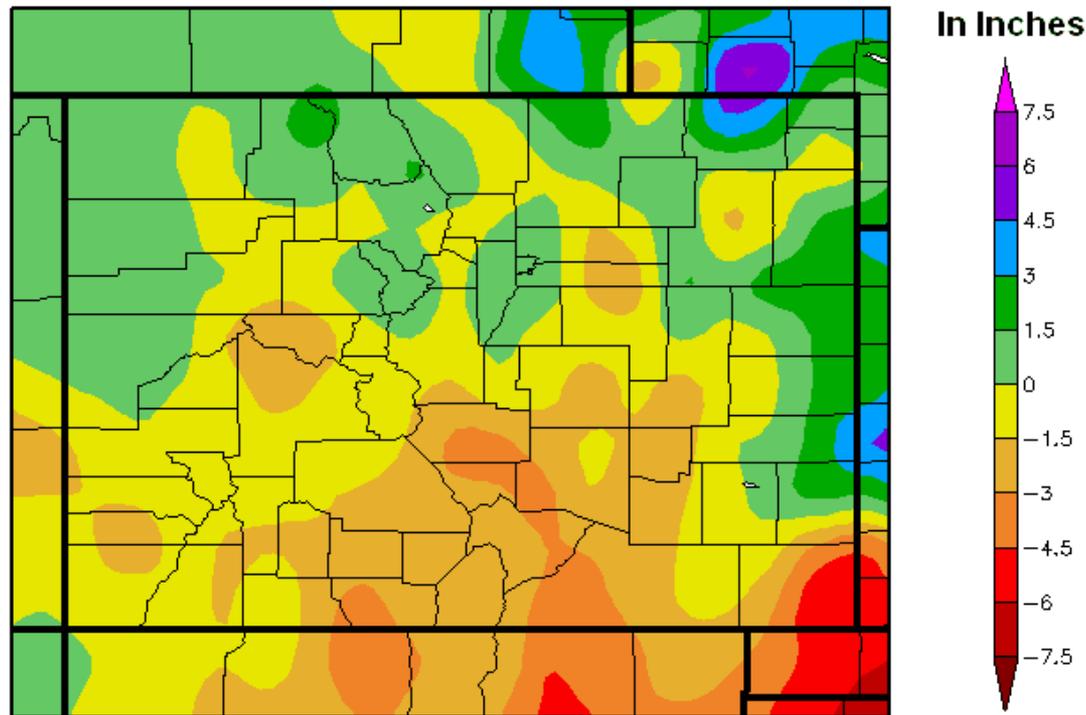
By the following fall and winter, except for Niño 3.4 indices associated with the La Niña events of 1976-1977 and 1989-1990, indices for the remaining five events fell below -0.5 degrees C, an indication of weak La Niña conditions. The Niño 3.4 index for the strong La Niña event of 1999-2000 actually fell below -1.5 degrees C, an indication of a strong cold phase ENSO event. Only the 1976-1977 event became an El Niño during the following winter.



**Precipitation,
and Drought
Conditions
Across Colorado
from Mid-May to
Mid-August
2011**

Departure from Normal Precipitation For Colorado

May 21 to August 18, 2011



During the 90-day period ending August 18, 2011, precipitation departures across Colorado ranged from near 6 inches above normal along the northeast border to around 6 inches below normal in the far southeast corner of the state.

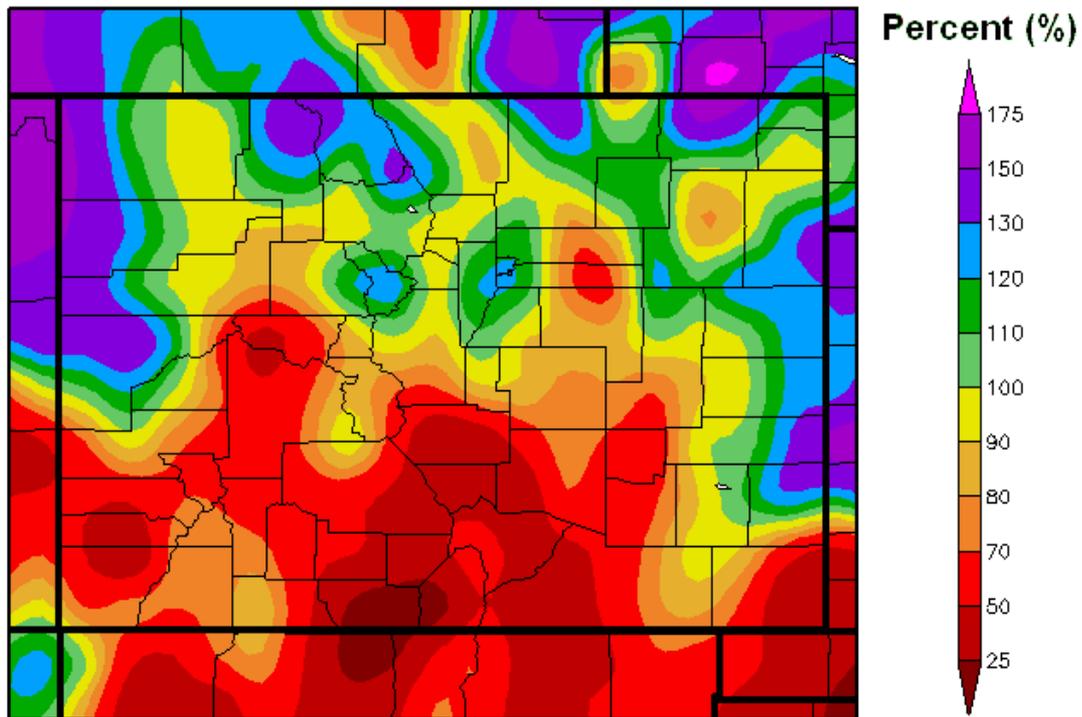
Overall, precipitation was generally above normal across northern Colorado, including the greater Denver metro area, and below normal across southern sections of the state. This north-south distribution in precipitation has been in place since early last spring.

Generated 8/19/2011 at HPRCC using provisional data.

Regional Climate Centers

Percent of Normal Precipitation for Colorado

May 21 to August 18, 2011



Generated 8/19/2011 at HPRCC using provisional data.

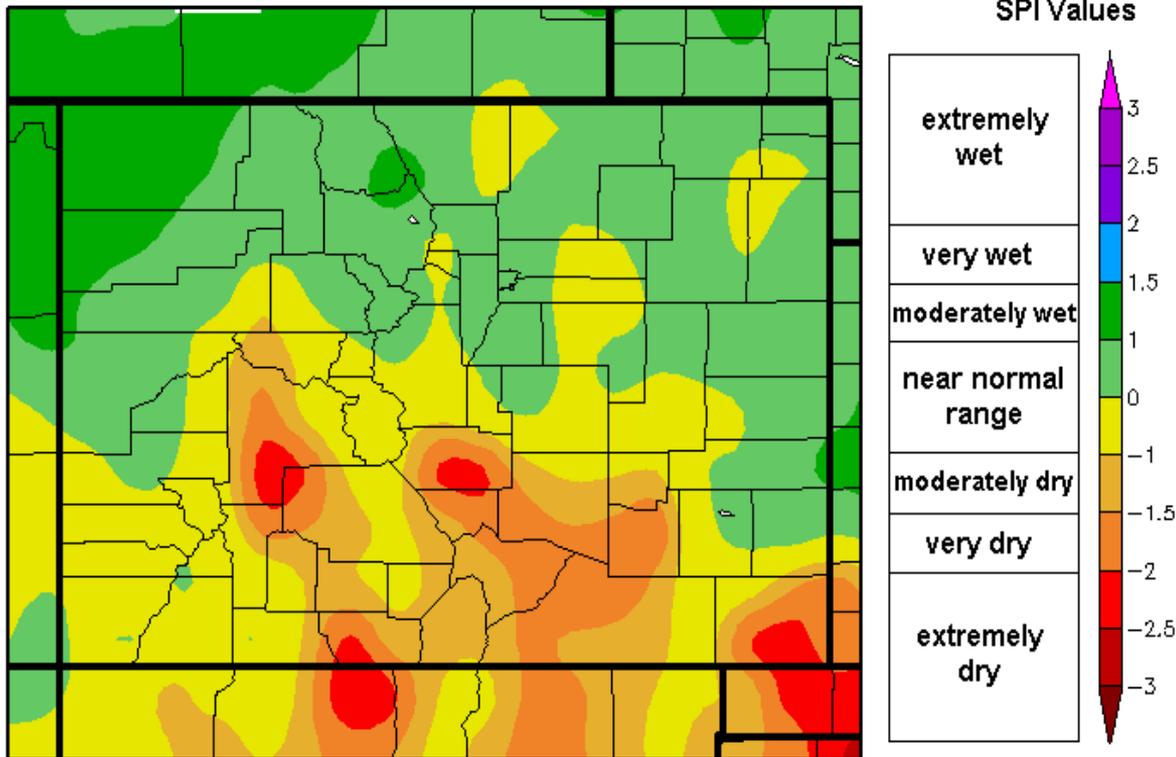
Regional Climate Centers

Precipitation totals across southern Colorado for the same 90-day period generally ranged from 25 to 70 percent of normal, with some areas such as the San Luis Valley, recording amounts less than 25 percent of normal.

In contrast, precipitation across northern Colorado was more plentiful during the period. Departures ranged from 100 to 150 percent of normal, with parts of northwest and northeast Colorado measuring totals close to 200 percent of normal.

Precipitation departures observed across the greater Denver metro area ranged from 110 to 130 percent of normal. This greater than normal precipitation can be attributed to heavy monsoon rainfall that occurred on several days during July.

3-Month Standardized Precipitation Index (SPI) for Colorado May 21 to August 18, 2011



Generated 8/19/2011 at HPRCC using provisional data.

Regional Climate Centers

The **Standardized Precipitation Index (SPI)** indicated near normal to moderately wet conditions across northern Colorado, with the wettest conditions across the northwest corner of the state.

The reverse was observed across much of southern Colorado where moderately dry to extremely dry conditions were indicated. However, the San Luis Valley, the southern mountain ranges and the Arkansas River Valley saw some improvement due in large part to a marked increase in precipitation during the summer monsoon.

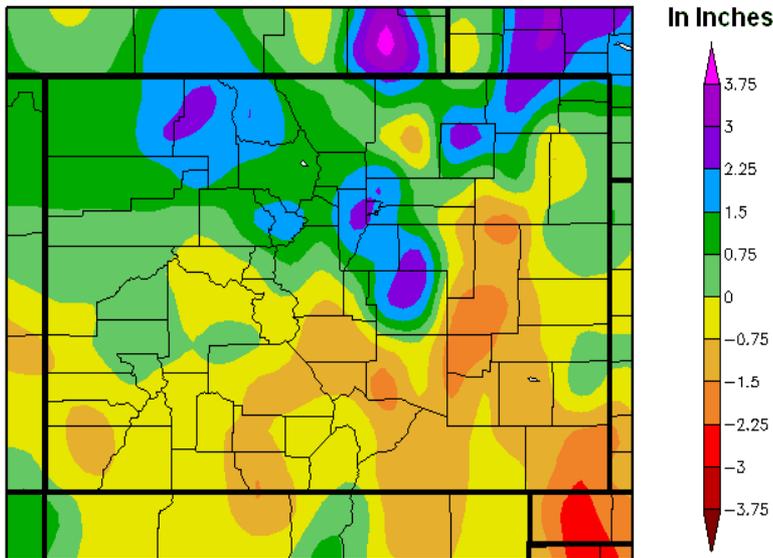
The **SPI** was developed to monitor potential short term agricultural and long-term hydrological drought conditions. The SPI is a probability index that considers only precipitation.

2011		<i>JULY</i>					2011
2011		<i>AUGUST</i>					2011
Sunday		Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
3	1	2	3	4	5	6	
10	7	8	9	10	11	12	13
17	14	15	16	17	18	19	20
24	21	22	23	24	25	26	27
31	28	29	30	31			

Baker NWS Boulder

Temperature,
Precipitation
and Drought
Conditions
Across Colorado
From Mid-July to
Mid-August
2011

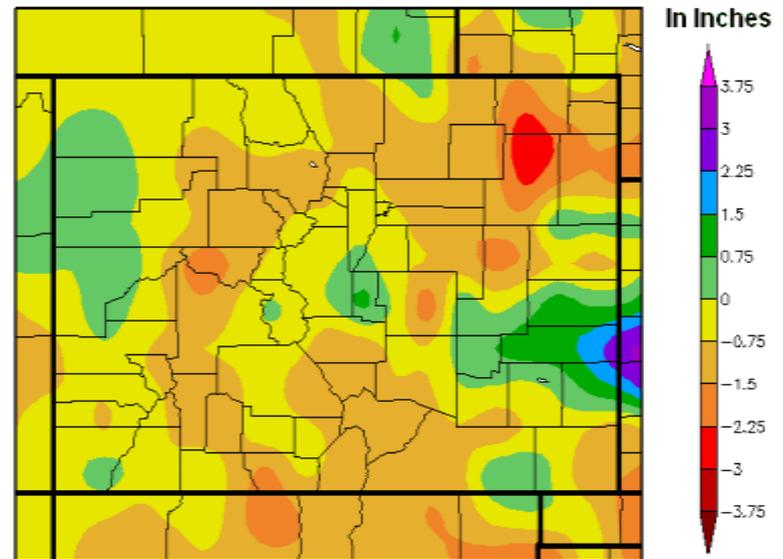
Departure from Normal Precipitation for Colorado June 25 to July 24, 2011



Generated 7/25/2011 at HPRCC using provisional data.

Regional Climate Centers

Departure from Normal Precipitation for Colorado July 20 to August 18, 2011



Generated 8/19/2011 at HPRCC using provisional data.

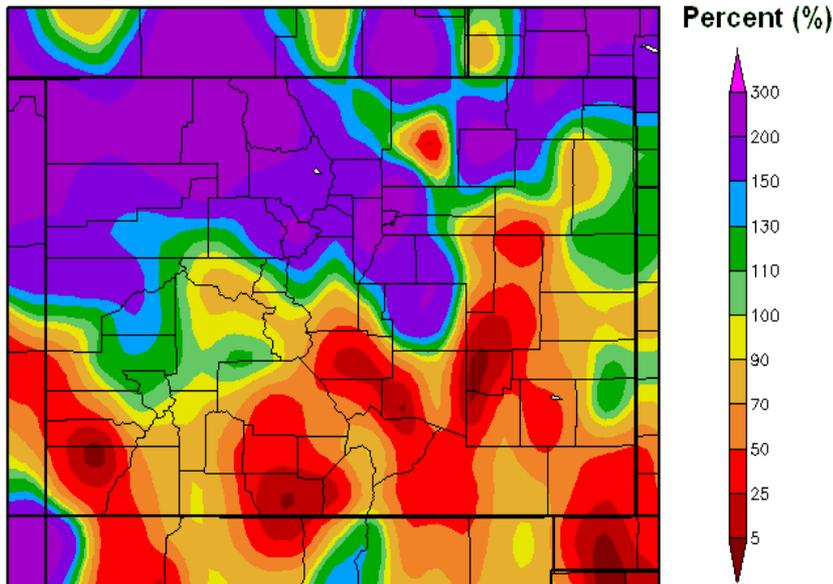
Regional Climate Centers

During the 30-day period ending August 18, 2011, precipitation across most of Colorado fell below normal. Exceptions include the high plateau region in northwest Colorado and along the Arkansas River in southeast Colorado where precipitation amounts ranged from one to three inches above normal. Compare that to the wetter than normal conditions observed across most of northern Colorado during the previous 30 day period (see map on left.)

The northeast plains of Colorado saw a significant decrease in precipitation during this period, particularly early in August, with an abrupt end of the summer monsoon. Parts of the northeast recorded totals as much as 2 to 3 inches below normal. These negative departures are similar to those observed on the southeast plains of Colorado during the previous 30-day period.

Percent of Normal Precipitation for Colorado

June 25 to July 24, 2011

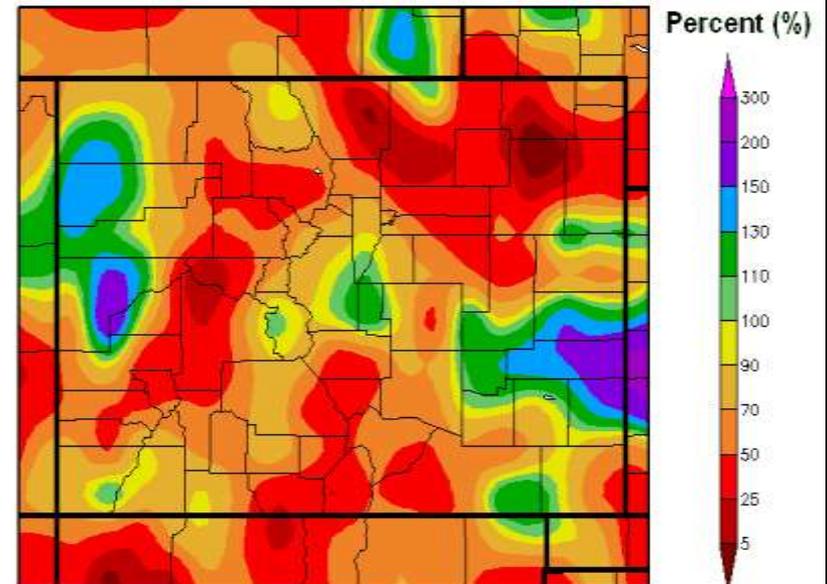


Generated 7/25/2011 at HPRCC using provisional data.

Regional Climate Centers

Percent of Normal Precipitation for Colorado

July 20 to August 18, 2011

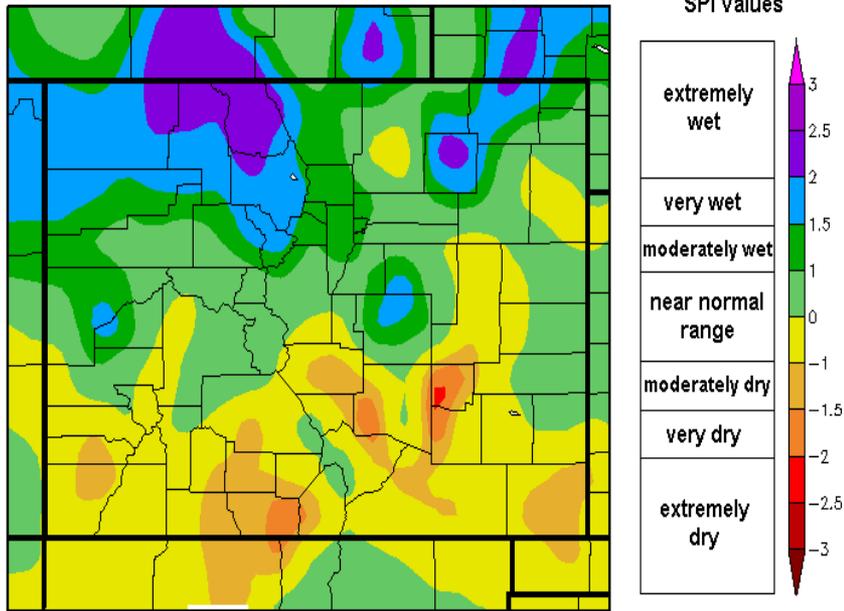


Generated 8/19/2011 at HPRCC using provisional data.

Regional Climate Centers

During the latest 30-day period, precipitation deficits increased significantly across nearly all of Colorado, with the northern half of the state experiencing the greatest change from the previous 30-day period. Except for pockets of precipitation surplus in northwest and southeast Colorado, totals generally ranged from 50 to 90 percent of normal, with many areas falling to less than 25 percent of normal.

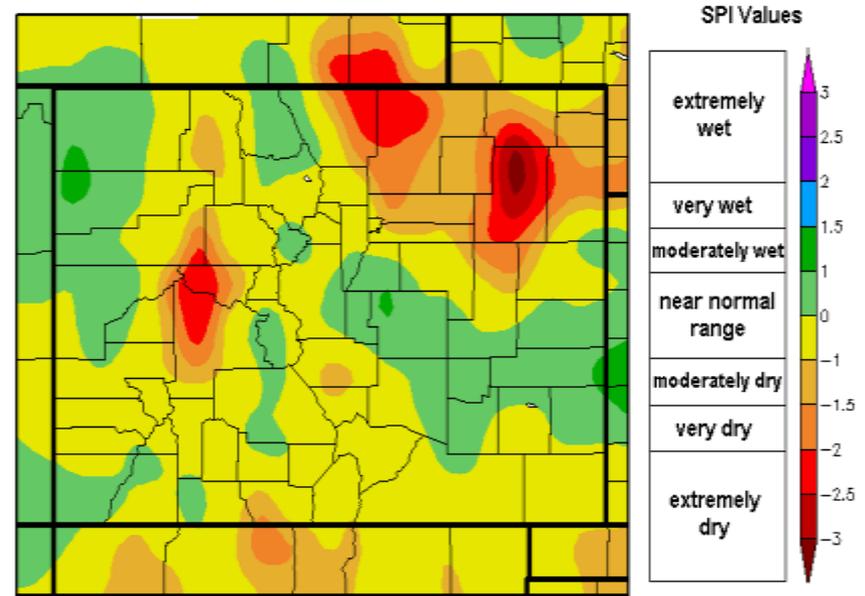
30 Day Standardized Precipitation Index (SPI)
for Colorado
June 25 to July 24, 2011



Generated 7/25/2011 at HPRCC using provisional data.

Regional Climate Centers

30 Day Standardized Precipitation Index (SPI)
for Colorado
July 20 to August 18, 2011



Generated 8/19/2011 at HPRCC using provisional data.

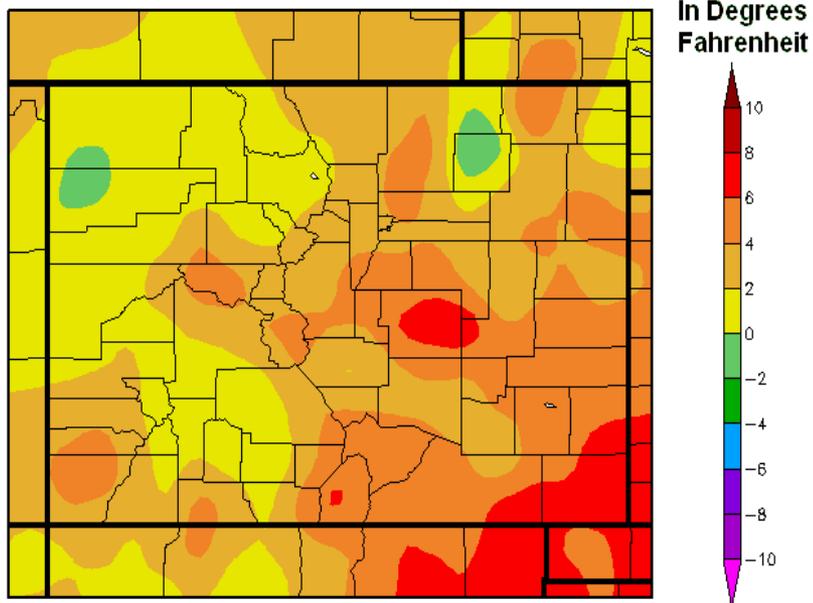
Regional Climate Centers

The Standardized Precipitation Index (SPI) clearly illustrates a dramatic change in moisture conditions across Colorado. Portions of northwest Colorado went from extremely wet to moderately dry. The northeast plains saw moderately to very wet conditions giving way to very dry and even extremely dry conditions from late June to early August.

Subtle changes in moisture conditions were observed across southern Colorado, although parts of the southeast plains and south central valleys went from very dry to slightly wetter than normal conditions during this 30-day period.

Departure from Normal Temperature for Colorado

June 25 to July 24, 2011

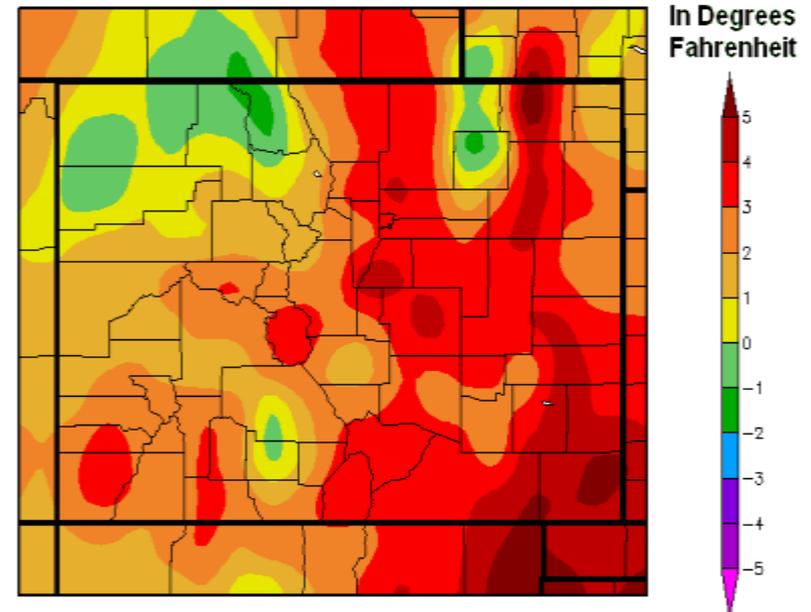


Generated 7/25/2011 at HPRCC using provisional data.

Regional Climate Centers

Departure from Normal Temperature for Colorado

July 20 to August 18, 2011



Generated 8/19/2011 at HPRCC using provisional data.

Regional Climate Centers

Most of Colorado continued to experience above average temperatures during the 30-day period ending August 18th. The greatest temperature departures from normal were observed east of the Continental Divide where mean temperature values varied from 2 to 5 degrees (F) above normal. The mountains and western slope also saw above normal temperatures, although parts of the northwest and northeast plains continued to experience below normal readings.

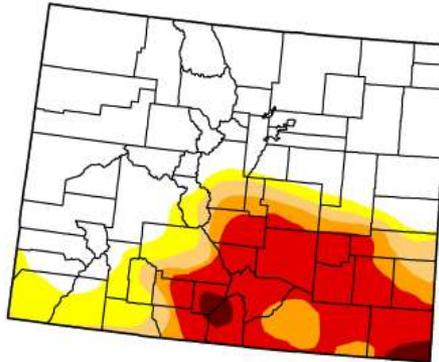
U.S. Drought Monitor

Colorado

August 16, 2011
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	61.06	38.94	30.11	24.84	18.43	1.23
Last Week (08/09/2011 map)	61.06	38.94	30.11	24.84	18.37	1.45
3 Months Ago (05/17/2011 map)	42.60	57.40	45.12	31.10	7.53	0.34
Start of Calendar Year (12/28/2010 map)	40.40	59.60	49.57	10.13	0.00	0.00
Start of Water Year (09/29/2010 map)	28.86	71.14	10.70	0.00	0.00	0.00
One Year Ago (08/10/2010 map)	83.63	16.37	0.00	0.00	0.00	0.00



Intensity:



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

<http://drought.unl.edu/dm>



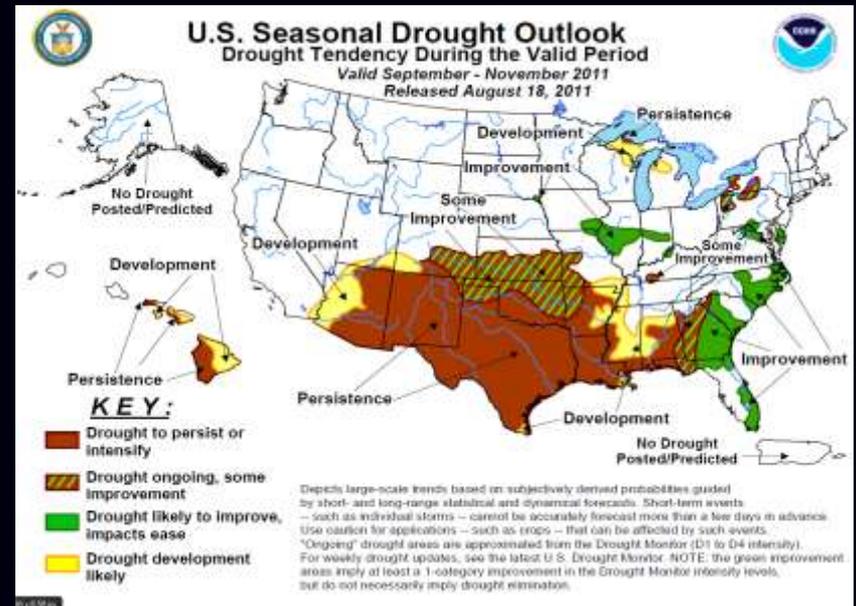
Released Thursday, August 18, 2011
Laura Edwards, Western Regional Climate Center

Latest Drought Outlook For Colorado

The latest drought outlook from the National Drought Mitigation Center calls for modest improvement in the drought conditions across southeast Colorado, and further drought development across the southwest part of the state.

Current Drought Conditions Across Colorado

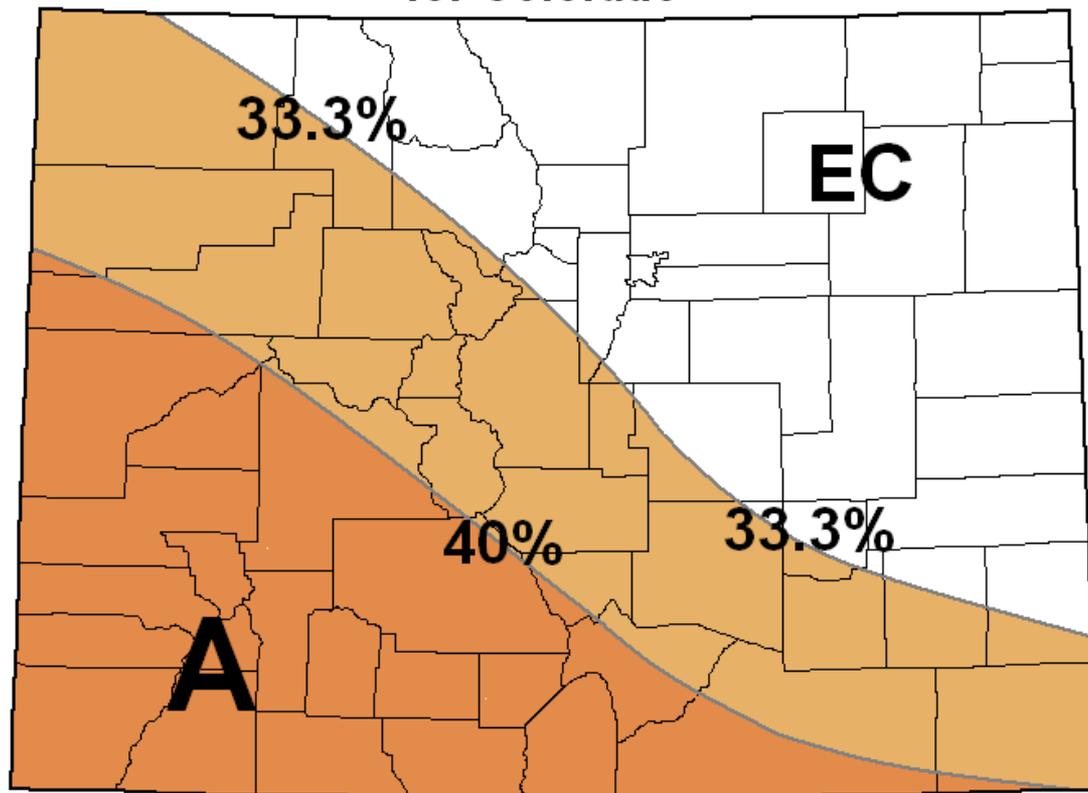
As of the middle of August, drought conditions largely remain confined to the southwest corner of Colorado, the mountains and valleys of south central Colorado, and the state's southeast plains. As of August 16, 2011, the U.S Drought Monitor indicated exceptionally dry conditions in the far southeast corner of the state and in the San Luis Valley of south central Colorado.



Source: National Drought Mitigation Center

**September - November 2011
Temperature and Precipitation
Outlooks
For Colorado
From NOAA's
Climate Prediction Center**

September 2011 Temperature Outlook for Colorado



One-Month Outlook
Temperature Probability
0.5 Month Lead
Valid September 2011
Made: 18 August 2011

A Means Above Normal (Average)
N Means Normal (Average)
B Means Below Normal (Average)
EC Means Equal (or Undetermined)
Chances for A, N and B

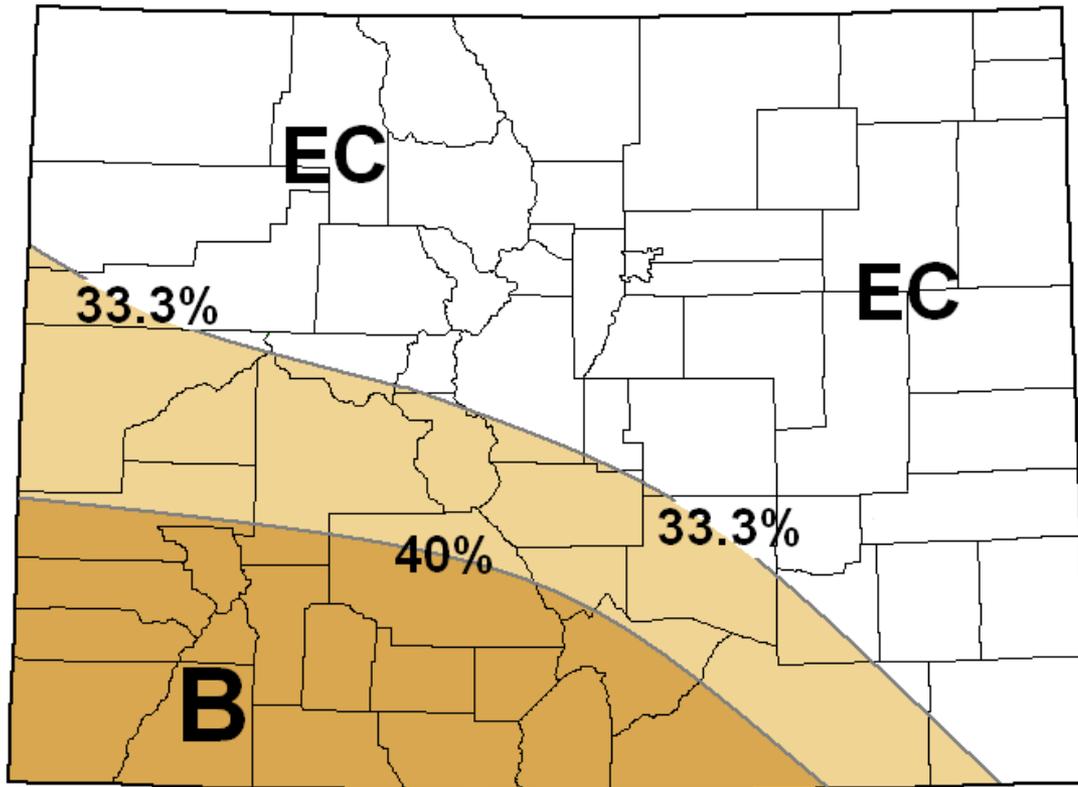
Source: NOAA/Climate Prediction Center

September 2011 Temperature Outlook For Colorado

The latest outlook from the Climate Prediction Center (CPC) calls for above average temperature (at least a 33 percent chance) across the southwest half of Colorado.

The temperature outlook for the remainder of the state is less certain as designated by the EC symbol.

September 2011 Precipitation Outlook for Colorado



One-Month Outlook
Precipitation Probability
0.5 Month Lead
Valid September 2011
Made: 18 August 2011

A Means Above Normal (Average)
N Means Normal (Average)
B Means Below Normal (Average)
EC Means Equal (or Undetermined)
Chances for A, N and B

Source: NOAA/Climate Prediction Center

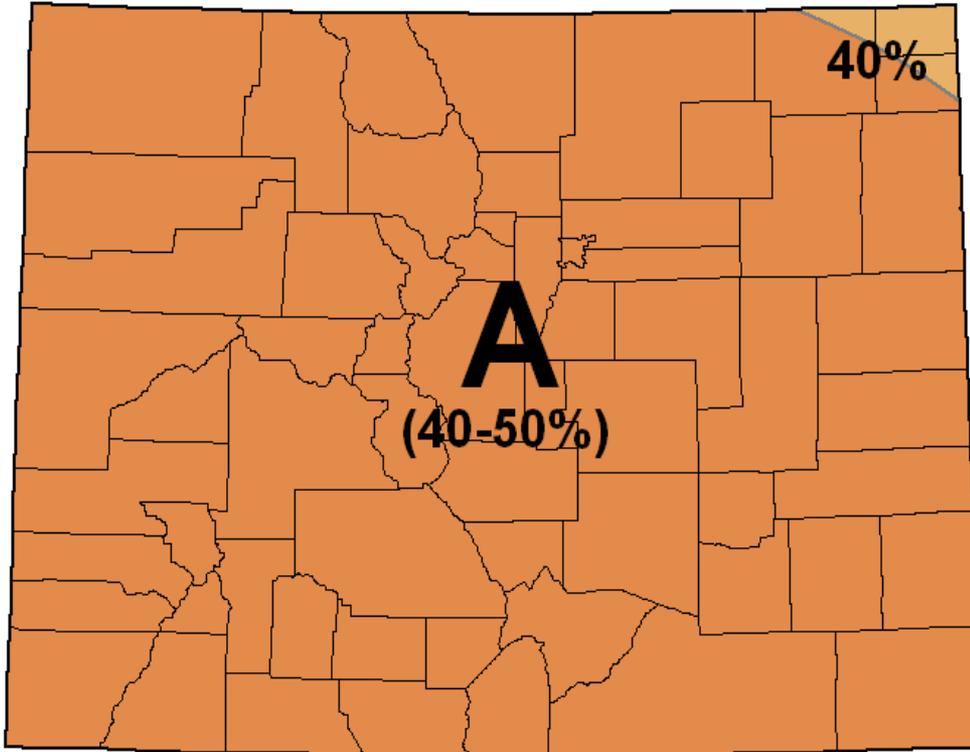
September 2011 Precipitation Outlook For Colorado

The latest CPC outlook calls for below average precipitation (at least a 33 percent chance) across the southwest third of Colorado.

The outlook also calls for an equal or undeterminable chance for above, below and normal (average) precipitation across the remainder of the state, as indicated by the EC symbol.

September-October-November 2011 Temperature Outlook for Colorado

September, October and November 2011 Temperature Outlook for Colorado



The latest 3-month outlook calls for above average temperature (40-50 percent chance) across all except the extreme northeast corner of Colorado.

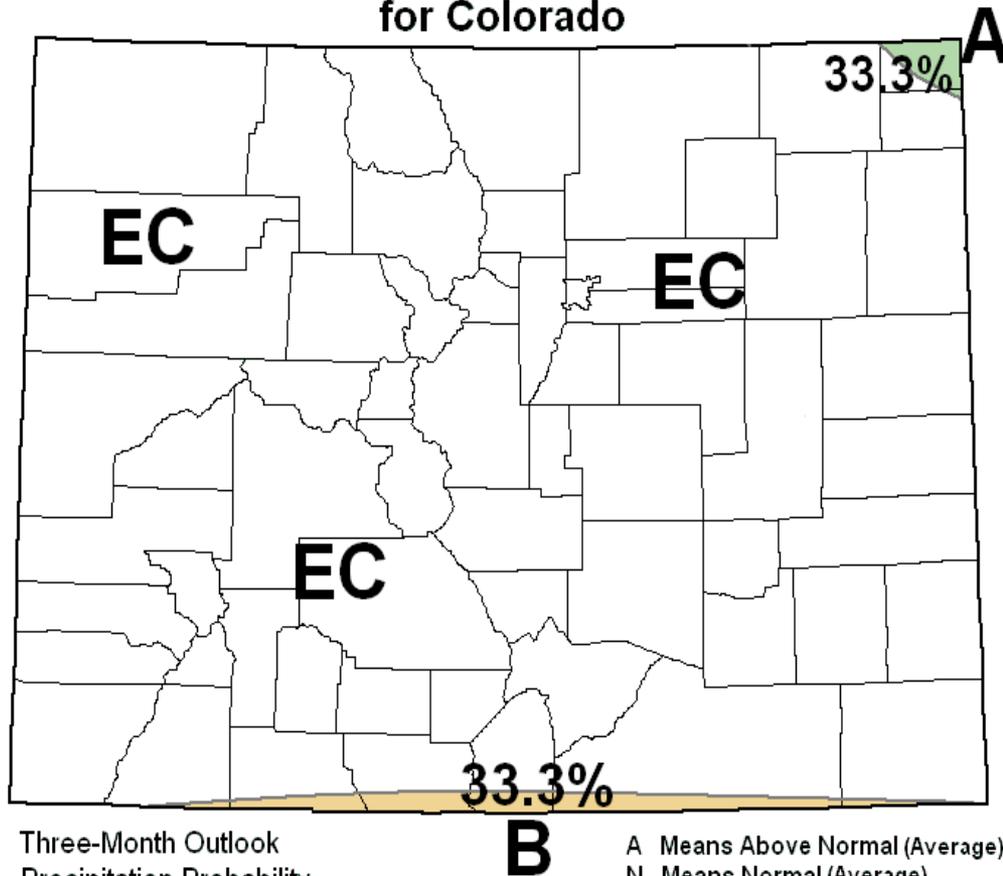
Keep in mind that CPC temperature and precipitation outlooks should not be thought of as an indicator of much these weather elements will deviate from average.

Three-Month Outlook
Temperature Probability
0.5 Month Lead
Valid SON 2011
Made: 18 Aug 2011

A Means Above Normal (Average)
N Means Normal (Average)
B Means Below Normal (Average)
EC Means Equal (or Undetermined)
Chances for A, N and B

Source: NOAA/Climate Prediction Center

September-October-November 2011 Precipitation Outlook for Colorado



Three-Month Outlook
Precipitation Probability
0.5 Month Lead
Valid SON 2011
Made: 18 Aug 2011

A Means Above Normal (Average)
N Means Normal (Average)
B Means Below Normal (Average)
EC Means Equal (or Undetermined)
Chances for A, N and B

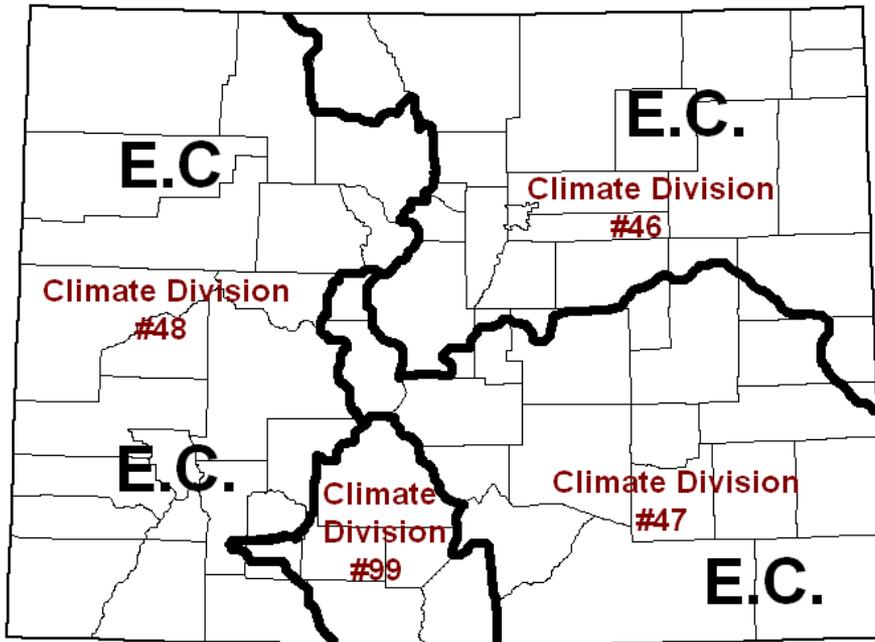
Source: NOAA/Climate Prediction Center

September, October and November 2011 Precipitation Outlook for Colorado

The latest 3-month precipitation outlook for Colorado calls for equal chances of above, below and average precipitation for all except the extreme southern border and far northeast corner of the state.

Adding Value to an “EC” Outlook

September-October-November Precipitation Outlook
for Colorado



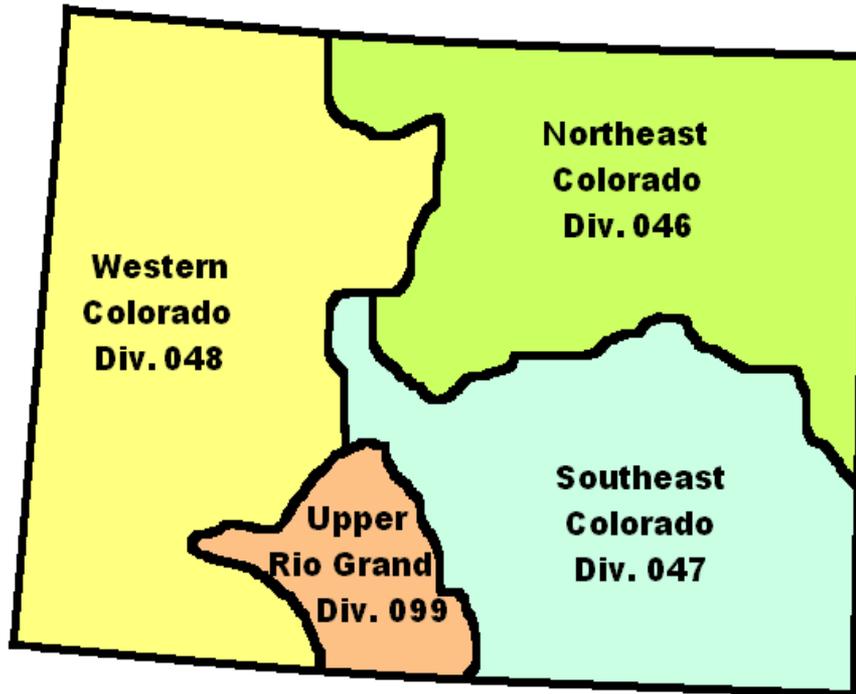
Three-Month Outlook
Precipitation Probability
0.5 Month Lead
Valid SON
Made: xxxxxx

A Means Above Normal (Average)
N Means Normal (Average)
B Means Below Normal (Average)
EC Means Equal (or Undetermined)
Chances for A, N and B

Outlooks prepared by the Climate Prediction Center (CPC) will often indicate an equal or undeterminable (EC) chance for above, below and average temperature and precipitation for a geographical area. An EC outlook by itself provides little information for the casual user of these products.

To add value to these “EC” outlooks, composites of seasonal temperature and precipitation have been prepared by CPC for every climate division of the United States. These composites afford the user with a valuable perspective into how temperatures and precipitation have historically performed during El Niño, ENSO-neutral and La Niña conditions.

Colorado Climate Divisions

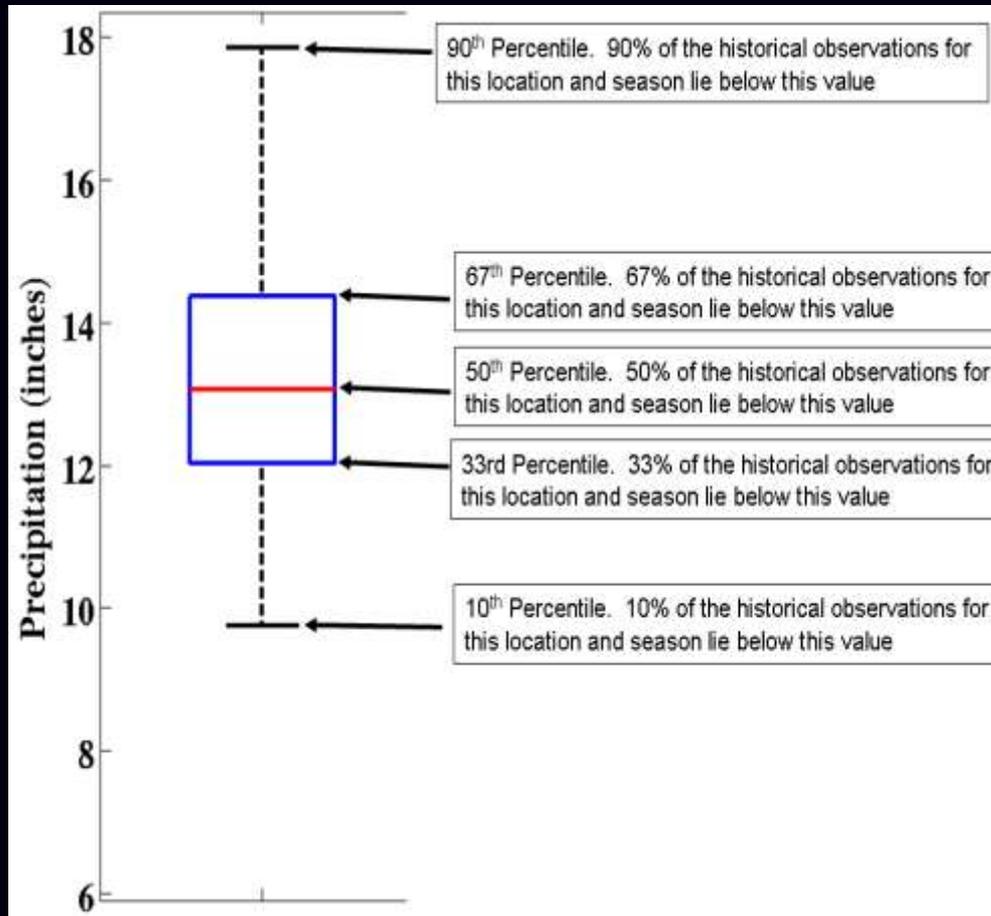


NOAA/Climate Prediction Center

CPC has subdivided Colorado into four climate divisions.

Climate divisions 046, 047 and 099 are located east of the Continental Divide, with division 048 located west of the Divide.

The Whisker Plot

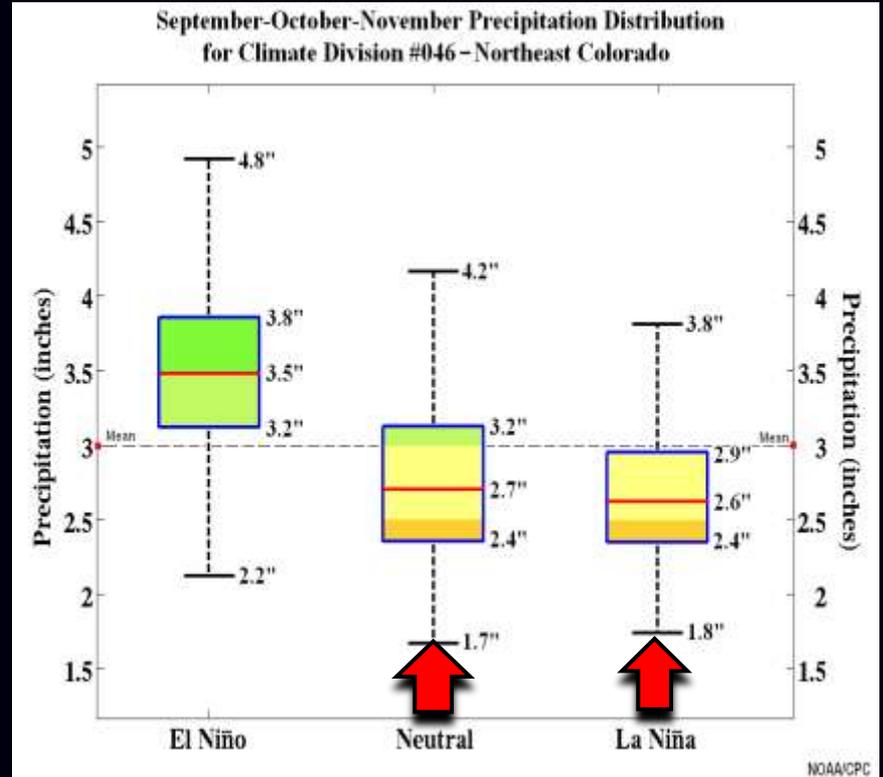
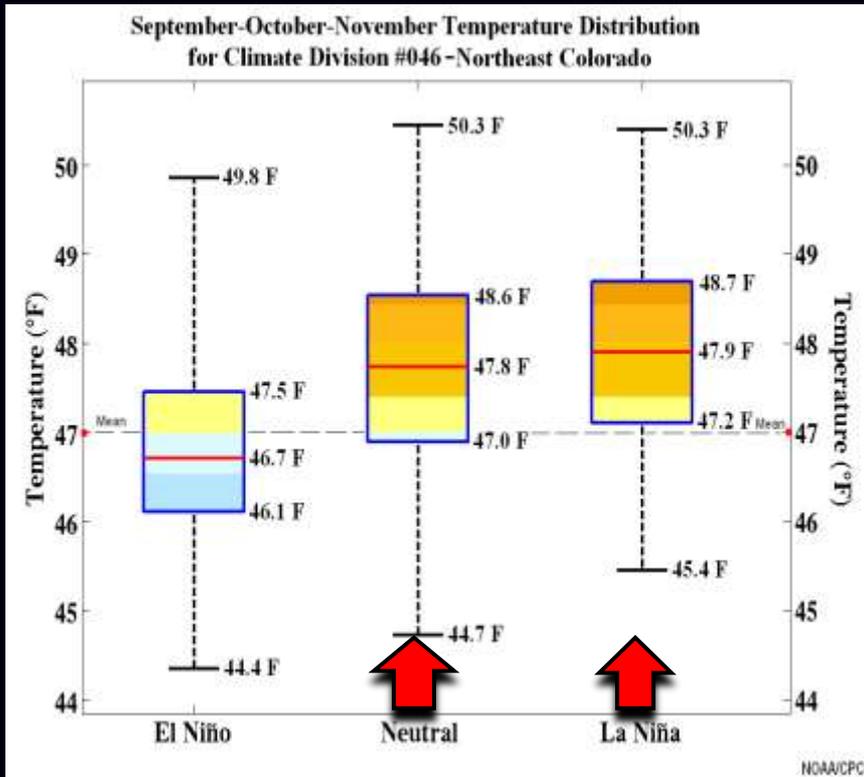


CPC has produced historical distributions of 3-month temperature and precipitation associated with three different ENSO categories – El Niño, La Niña and neutral (non-ENSO) events – for every climate division.

Distributions for each division are displayed using an ENSO box and whisker analysis plot (explanation to the left).

The red line inside the ENSO box represents the mean or 50th percentile of the data (temperature or precipitation) distribution. Approximately 34% of the total observations exist within the ENSO box, and the remaining observations (or 66%) outside of the box.

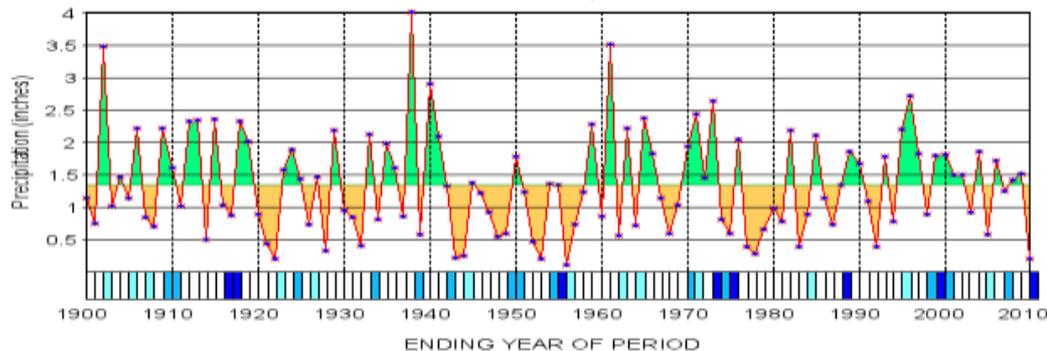
ENSO Box and Whisker Analysis Plots for the Northeast Colorado Climate Division #046 for the 3-Month Season September-November



Composites for September-November prepared by the Climate Prediction Center indicate **slightly above average temperatures** for the northeast Colorado climate region 046 **during ENSO-neutral and La Niña conditions**, and slightly below average temperatures during El Niño conditions.

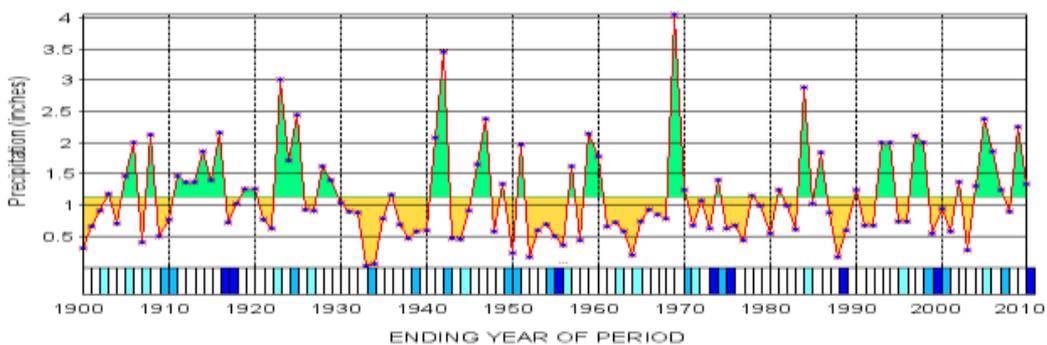
Historical precipitation composites prepared for northeast Colorado indicate **slightly below average precipitation** during **ENSO-neutral conditions and La Niña conditions**, and above average precipitation with El Niño conditions.

Total Precipitation for the Northeast Colorado Climate Division #046 for the Month of September



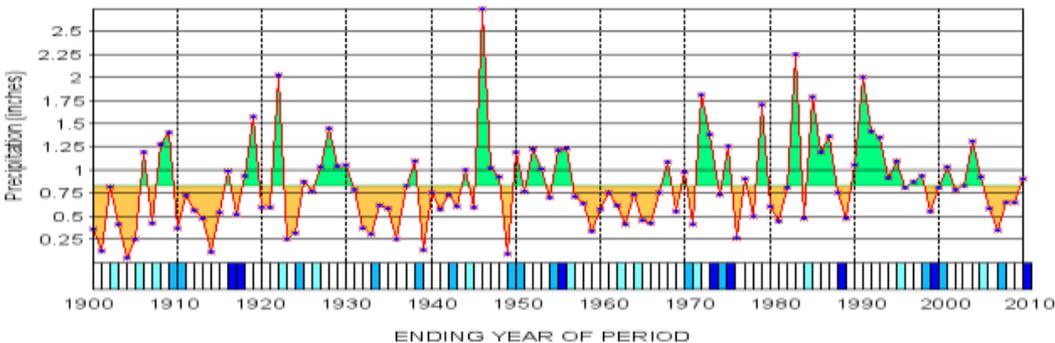
La Nina Winter Season
 Weak Moderate Strong
 --- green line: 1950-2011 average
 --- blue dots: 1 year running mean

Total Precipitation for the Northeast Colorado Climate Division #046 for the Month of October



La Nina Winter Season
 Weak Moderate Strong
 --- green line: 1950-2011 average
 --- blue dots: 1 year running mean

Total Precipitation for the Northeast Colorado Climate Division #046 for the Month of November



La Nina Winter Season
 Weak Moderate Strong
 --- green line: 1950-2011 average
 --- blue dots: 1 year running mean

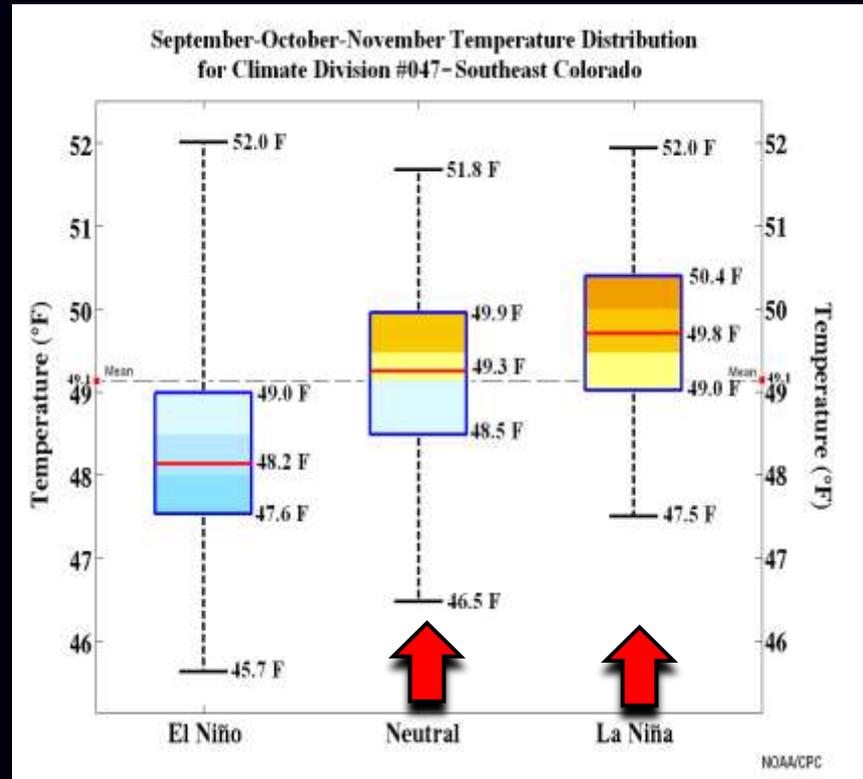
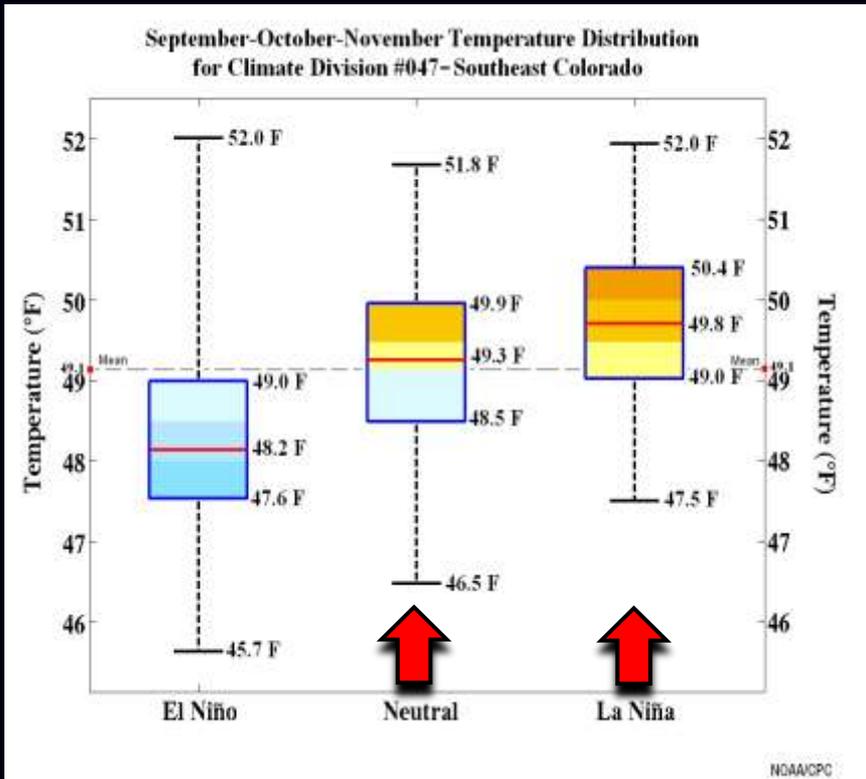
Comparing Total Monthly Precipitation for the Northeast Colorado Climate Division #046 to La Niña Events Since 1900

Averaged total monthly precipitation for September, October and November was used in this simple comparison.

The horizontal green line represents the 1950-2011 precipitation average for each month.

On this scale, it is difficult to draw any clear conclusions between precipitation and La Niña. Although the connection between the two appears to strengthen during October and November as La Niña conditions normally become more pronounced going into winter.

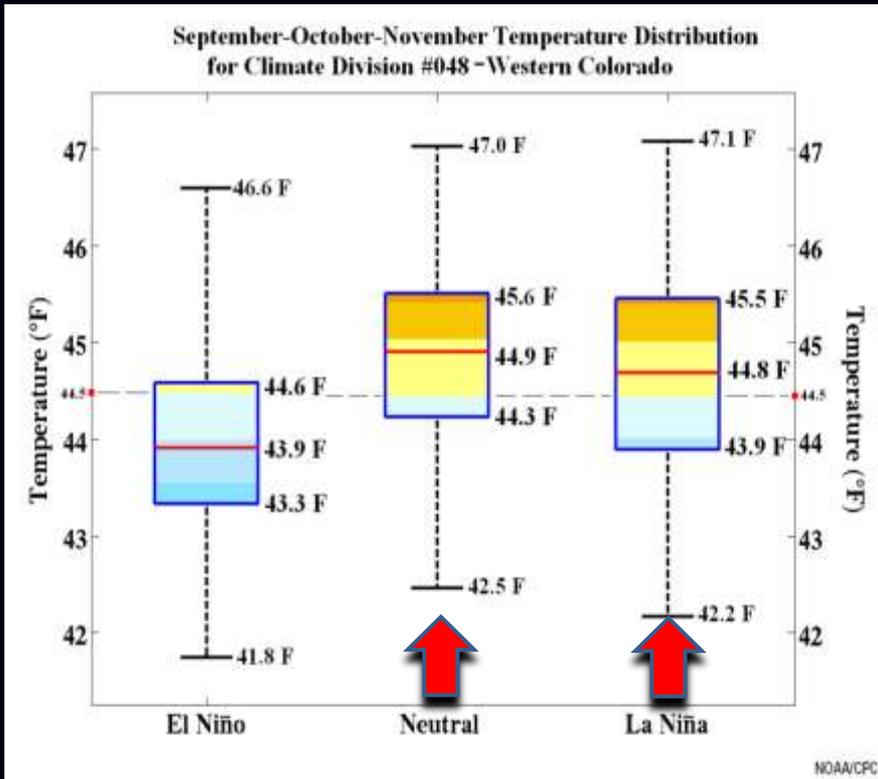
ENSO Box and Whisker Analysis Plots for the Southeast Colorado Climate Division #047 for the 3-Month Season of September-November



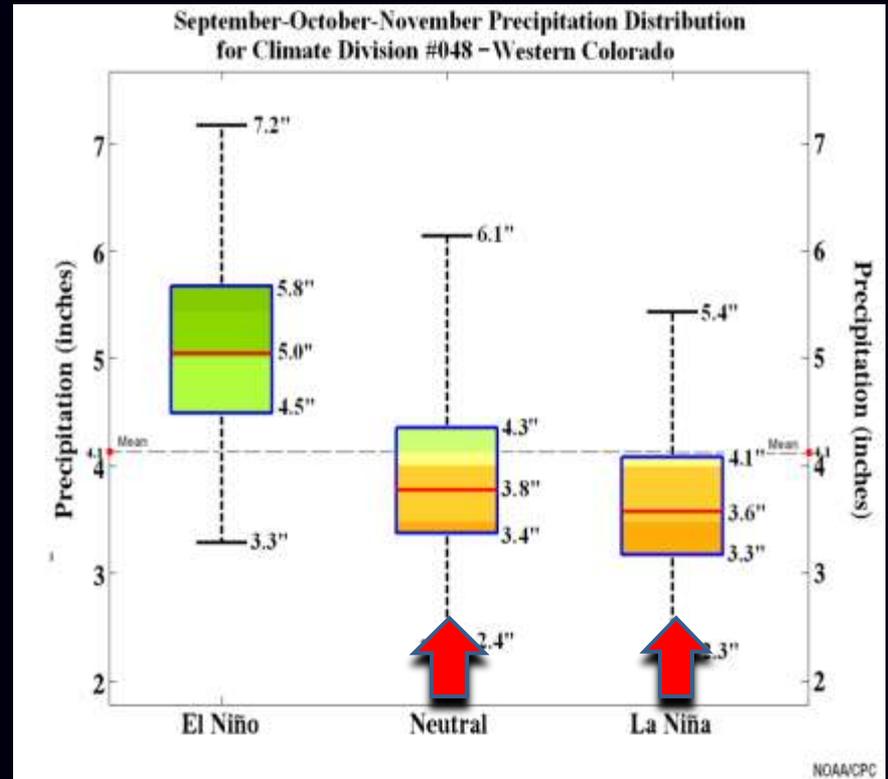
Historically, temperature in southeast Colorado was slightly below average during El Niño conditions, **near average with ENSO-neutral conditions**, and slightly above average during La Niña conditions for this three month period.

Precipitation in southeast Colorado was above average during El Niño conditions, **near average with ENSO-neutral conditions** and below average during La Niña conditions for this period.

ENSO Box and Whisker Analysis Plots for the Western Colorado Climate Division #048 for the 3-Month Season of August-September-October



For western Colorado, temperature was slightly below average during El Niño conditions, and slightly above average with ENSO-neutral and La Niña conditions for this three month period.



Historically, precipitation in western Colorado was above average during El Niño conditions, and slightly below average during ENSO-neutral and La Niña conditions.

These historical composites do not distinguish between El Niño and La Niña events of weak, moderate and strong intensity.

Summary

- ENSO-neutral conditions currently exist in the Pacific Ocean, although as of the first week of August, global atmospheric circulations continue to exhibit traits of weak La Niña conditions.
- Sea surface temperatures (SST) have remained very close to climatological normals along the Equator in the Pacific Ocean during the past few weeks. Although surface and subsurface water temperatures have become increasingly negative in the east-central tropical Pacific Ocean, possibly an indication that La Niña conditions were developing in the Pacific .
- Many of the latest ENSO model forecasts, including NCEP's CFS dynamical forecast, have trended towards La Niña conditions by late this fall and a heightened probability that weak La Niña conditions will develop by the 2011-2012 winter season.
- Above normal temperatures were observed across most of Colorado during the past 30 days. Northern portions of the state saw the greatest change in temperature, and southern sections of the state continued to remain abnormally warm.
- Precipitation across Colorado significantly dropped off in August after many areas experienced above to much above normal rainfall during the peak of the summer monsoon in July. Areas east of the Continental Divide recorded the great precipitation deficits during the 30-day period ending August 18, 2011.
- The latest outlook for September-October-November from the Climate Prediction Center generally calls for above average temperatures, and an undeterminable or equal chance of above, below and near normal precipitation. Historically, precipitation for Colorado was slightly below normal during ENSO-neutral and La Niña conditions.