



Arizona Climate Summary

September 2013

Summary of conditions for August 2013

August 2013 Temperature and Precipitation Summary

August 1st – 16th: For the month of August, Arizona not only experienced hot temperatures, but had a good amount of moisture as well. To start off the month, a surface low over the Las Vegas region helped to pull moisture from south - southwest, resulting in the formation of thunderstorms throughout the valley for the first week. Tucson reported 0.20" of precipitation on the 6th which ended up being the most rainfall within a 24-hour period for this month. From August 8th to August 10th, there was little rainfall for most of the state but was soon answered with more rainfall for eastern parts of the state on the 12th and 13th. On the 6th, Flagstaff set a new record of 62 degrees for the lowest maximum temperature, previously 70 degrees in 2002. For Phoenix, a previous highest minimum temperature record 90 degrees was tied. This record was previously set in 2009.

August 17th – 30th: The second half of the month was by far the wettest although the heat persisted. A large ridge in the jet stream formed over the Midwest and pulled a lot of moisture from the Gulf of Mexico and Pacific Ocean. Monsoon-like conditions continued until the end of the month for most of the state. Flagstaff and Phoenix reported their greatest 24-hour precipitation for the 26th of August with Phoenix reporting 0.34" from 8/25 to 8/26 and Flagstaff reporting 0.96" for the same period. In Flagstaff, a highest minimum temperature record of 62 degrees was set on the 24th with the previous record value being 72 degrees, and a lowest maximum temperature record was tied with its previous record value of 64 degrees for the 25th. Phoenix managed to tie several previous records and break two records for highest maximum temperature and highest minimum temperature. No record low temperatures were reported for Phoenix this month.

In This Issue: Overview of August, graphs of the August daily maximum and minimum temperatures, precipitation, mean daily dew points for Flagstaff, Phoenix, and Tucson; August climate statistics, maps of mean monthly maximum and minimum temperatures, precipitation, dew points, wind speeds for August; and graphs of the mean August temperature and precipitation for the period of record for Tucson, Phoenix, and Flagstaff, graphs of the cumulative precipitation for the calendar year for Flagstaff, Phoenix, and Tucson. Climate calendars for Flagstaff, Phoenix, Tucson, Prescott, Winslow and Yuma, including daily and monthly normals and extremes, for each month of the year, can be downloaded directly from the State Climate website. See p. 16 of this report for calendar abbreviations.

Data are preliminary and are from the National Weather Service Forecast Offices in Flagstaff, Phoenix and Tucson.

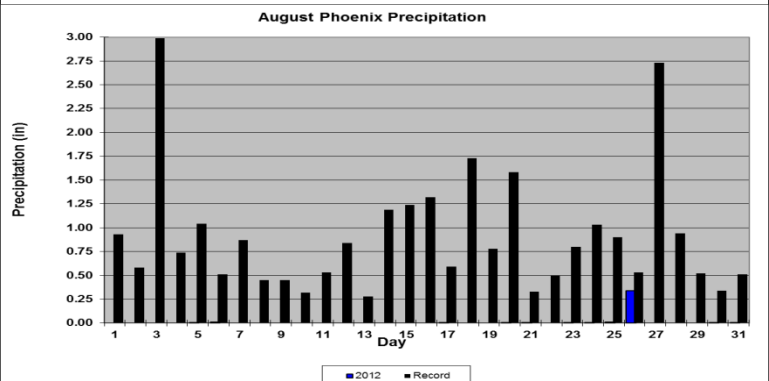
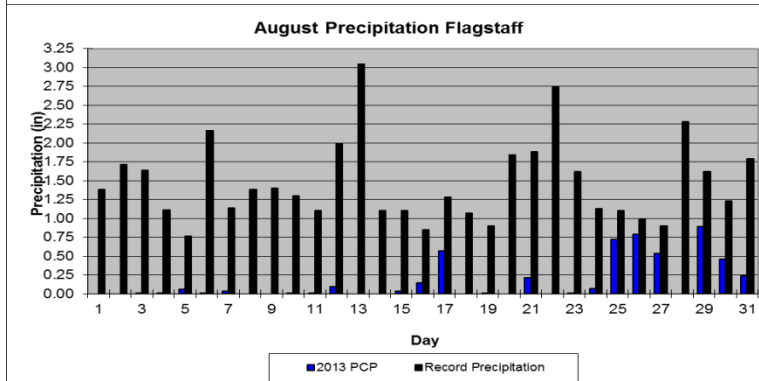
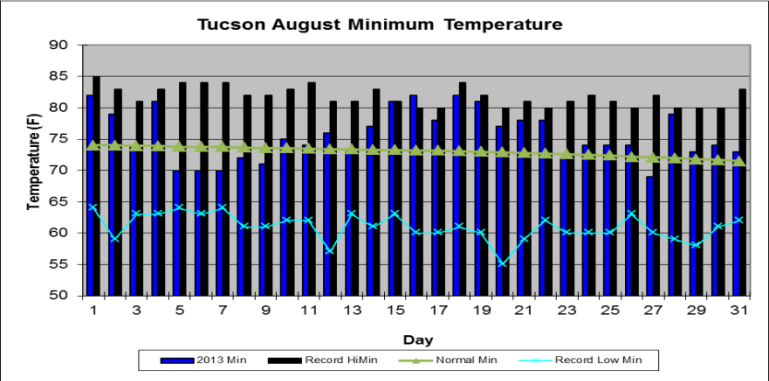
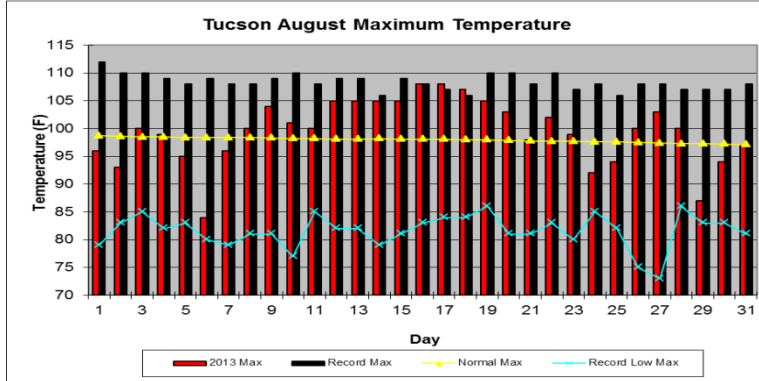
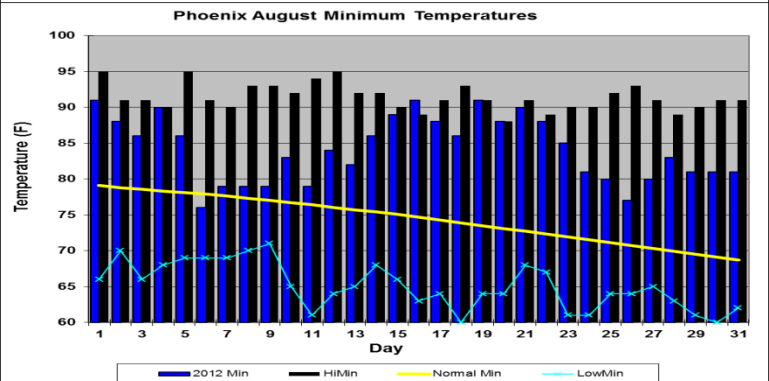
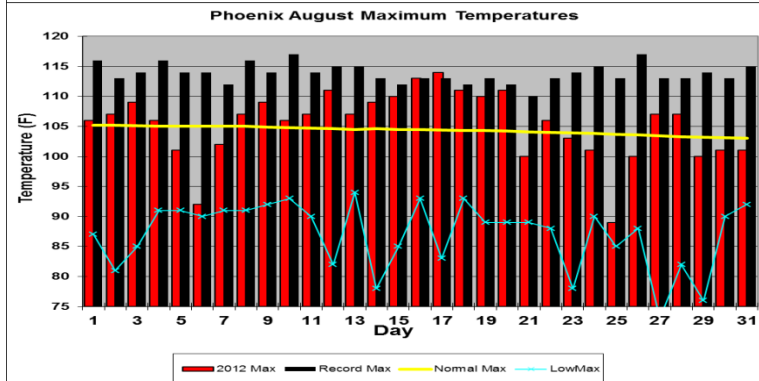
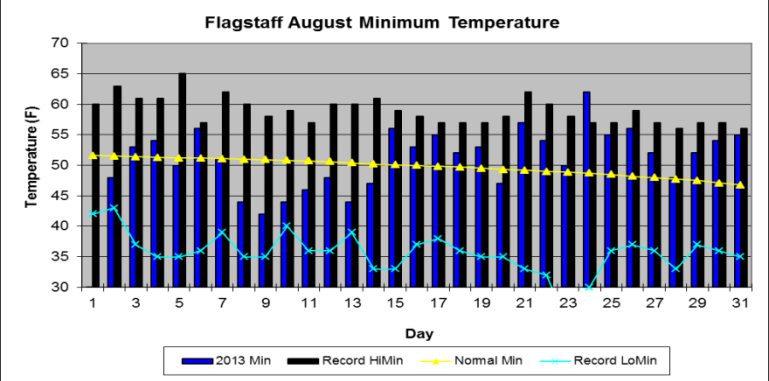
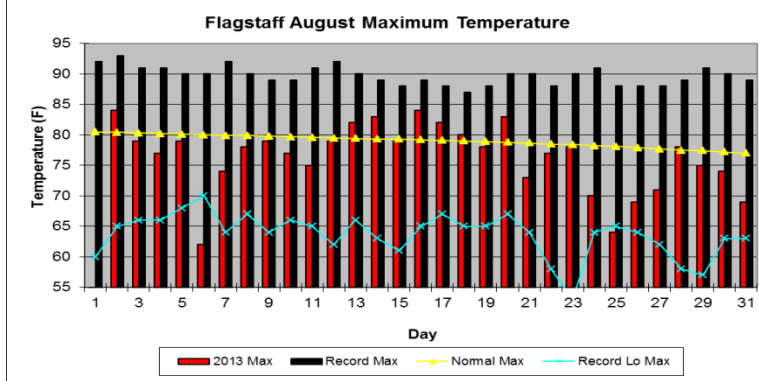
****Note:** The discrepancy between the Statewide Temperature and Precipitation values for Phoenix, Flagstaff and Tucson and the daily values in their graphs are due to the reporting times. Statewide Temperature and Precipitation values are taken at 5pm, while official daily records at the airports are taken from Midnight to Midnight.

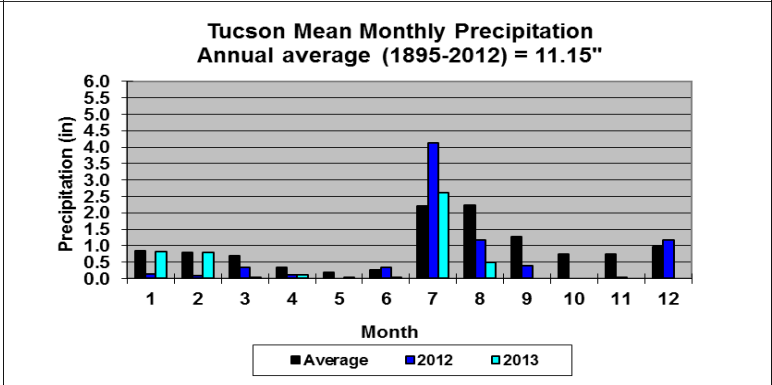
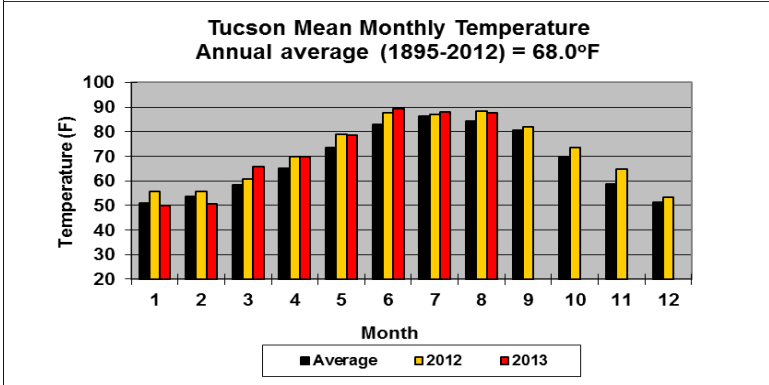
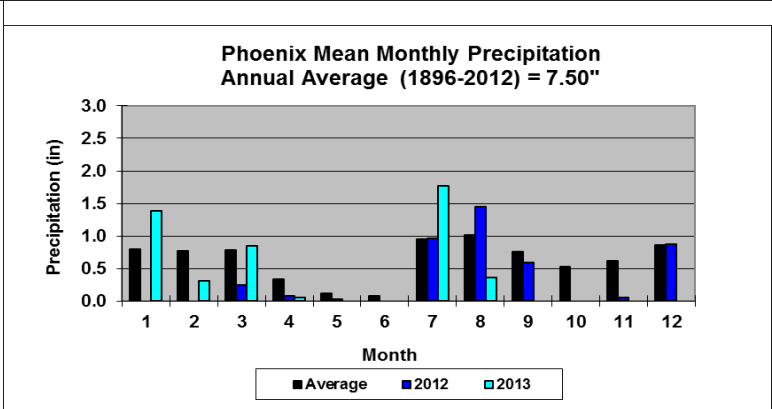
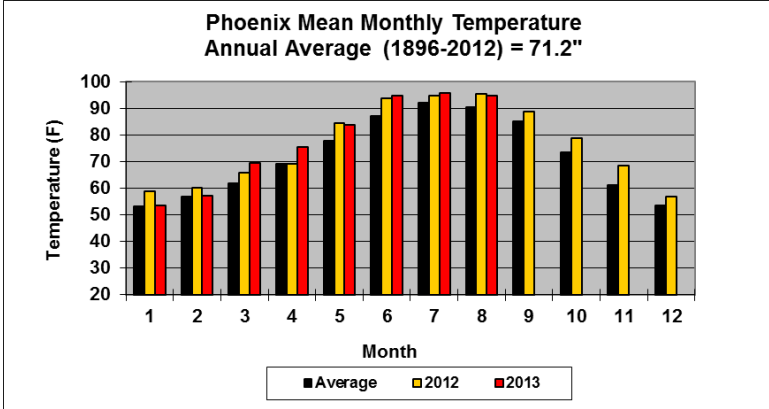
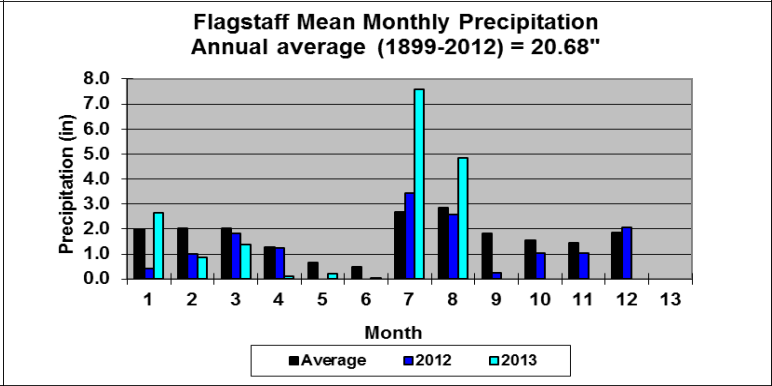
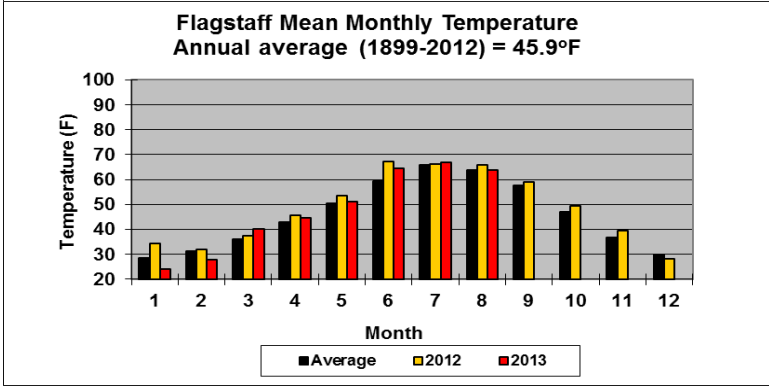
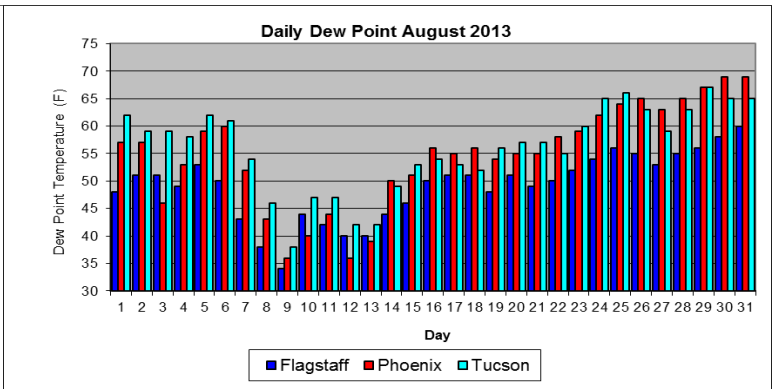
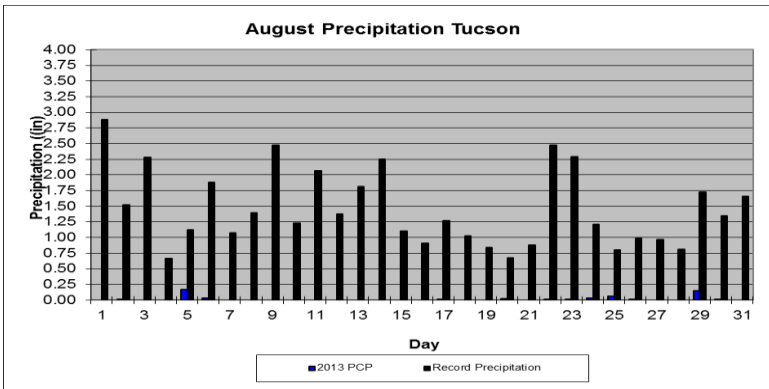
State Climate Office
Dr. Nancy J. Selover, State Climatologist
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August 2013 Daily Temperature, Precipitation, & Dew Point for Flagstaff, Phoenix, and Tucson





FLAGSTAFF CLIMATE STATISTICS

August 2013

This August had no significant ranking in temperature and was the 11th wettest on record.

Avg Max Temp (F) 76.5 Normal 78.4
 Avg Min Temp (F) 51.1 Normal 50.1
 Avg Mean Temp (F) 63.8 Normal 64.2
 Departure from Normal (F) -0.4

Highest Monthly Avg Temp (F) 67.5 in 1944
 Lowest Monthly Avg Temp (F) 59.5 in 1968

Highest Temp this month (F): 84 on 2nd, 16th
 Lowest Temp this month (F): 42 on 9th

Record High (F): 93 on 08/02/1902
 Record Low (F): 24 on 08/23/1968

Temperature or precipitation records this month:
 6th LoMax 62 set, previously 70 in 2002
 24th HiMin 62 set, previously 57 in 1944
 25th LoMax 64 tied, previously 65 in 1923

Flagstaff Number of Days of:
 Minimum Temp 55°F or higher 8
 Minimum Temp 45°F or lower 4

Maximum Temp 80°F or higher 7
 Maximum Temp 65°F or lower 2

Heating Degree Days 49 Normal 56
 Cooling Degree Days 19 Normal 33
 Degree base 65°F

Total August Precipitation 4.85"
 Normal August Precipitation 3.11"
 Departure from normal 1.74"
 Greatest 24-Hr Precipitation 0.96" on 08/26-08/27
 Total Precipitation Year-to-Date 17.68"
 Departure from Normal +3.49"

Number of Days:
 Clear 14
 Partly Cloudy 13
 Cloudy 3

Greatest August Precipitation 8.77" in 1904
 Least August Precipitation 0.26" in 1962

Average Wind Speed 3.5 mph
 Highest Peak Gust 30 mph from 220° on 10th

PHOENIX CLIMATE STATISTICS

August 2013

This August was the 8th warmest on record and had no significant ranking for precipitation.

Avg Max Temp(F) 105.3 Normal 104.4
 Avg Min Temp(F) 84.1 Normal 82.7
 Avg Mean Temp (F) 94.7 Normal 93.6
 Departure from Normal (F) +1.1

Highest Monthly Avg Temp (F) 98.3 in 2011
 Lowest Monthly Avg Temp (F) 84.6 in 1918

Highest Temp this month (F): 114.0 on 17th
 Lowest Temp this month (F): 76.0 on 6th

Record High (F): 117 on 08/26/2011
 Record Low (F): 58 on 08/20/1917

Temperature and precipitation records this month:
 4th HiMin 90 tied, first set in 2009
 16th HiMin 91 set, previous record 89 in 2010
 16th HiMax 113 tied, first set in 1992
 17th HiMax 114 set, previous record 113 set in 1992
 19th HiMin 91 tied, first set in 1982
 20th HiMin 88 tied, first set in 2007

Phoenix Number of Days of:
 Minimum Temp 80°F or lower 6
 Minimum Temp 90°F or higher 5
 Maximum Temp 100°F or lower 2
 Maximum Temp 110°F or higher 7

Heating Degree Days 0 Normal 0
 Cooling Degree Days 929 Normal 885

Degree base 65°F

Total August Precipitation	0.36"
Normal August Precipitation	1.00"
Departure from normal	-0.64"
Greatest 24-Hr Precipitation	0.34" on
08/25 – 08/26	
Total Precipitation Year-to-Date	4.74"
Departure from Normal	-0.54"

Number of Days:

Clear	6
Partly Cloudy	23
Cloudy	2

Greatest August Precipitation 5.33" in 1951
Least August Precipitation 0.00" in 1975 and 2 other years

Average Wind Speed 7.1 mph
Highest Peak Gust 56 mph from 190° on 26th

TUCSON CLIMATE STATISTICS August 2013

This August was the 5th warmest and had no significant ranking in precipitation.

Maximum Temp 90°F or lower	2
Maximum Temp 105°F or higher	8

Avg Max Temp(F)	99.5	Normal	97.4
Avg Min Temp(F)	75.6	Normal	73.3
Avg Mean Temp(F)	87.5	Normal	85.3
Departure from Normal (F)	+2.2		

Heating Degree Days	0	Normal	0
Cooling Degree Days	702	Normal	631
Degree base 65°F			

Highest Monthly Avg Temp (F)	90.2 in 1994
Lowest Monthly Avg Temp (F)	80.8 in 1923

Total August Precipitation	0.48"
Normal August Precipitation	2.39"
Departure from normal	-1.19"
Greatest 24-Hr Precipitation	0.20" on 08/05-08/06

Highest Temp this month (F): 108 on 16th, 17th
Lowest Temp this month (F): 69 on 27th

Total Precipitation Year-to-Date	4.85"
Departure from Normal	-3.06"
Greatest August Precipitation	7.93" in 1955
Least August Precipitation	0.08" in 1924

Record High (F): 112 on 08/01/1993
Record Low (F): 55 on 08/20/1917

Temperature or precipitation records this month:
None for Tucson, but
15th HiMin 81 tied, first set in 1961
16th HiMin 82 set, previous record 80 in 2002
16th HiMax 108 tied, first set in 1992
17th HiMax 108 set, previous record 107 in 1992
18th HiMax 107 set, previous record 106 in 1987

Number of Days:

Clear	25
Partly Cloudy	3
Cloudy	0

Average Wind Speed 7.1 mph
Highest Peak Gust 61 mph from 120° on 17th

Tucson Number of Days of:

Minimum Temp 70°F or lower	4
Minimum Temp 80°F or higher	6

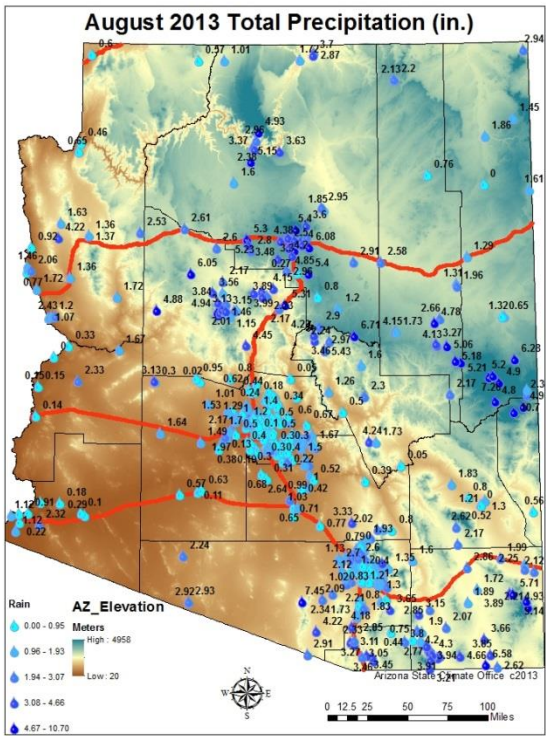
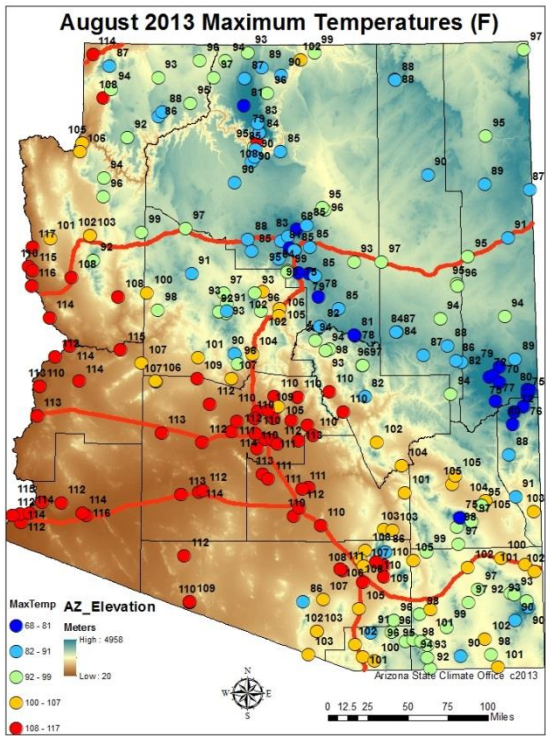
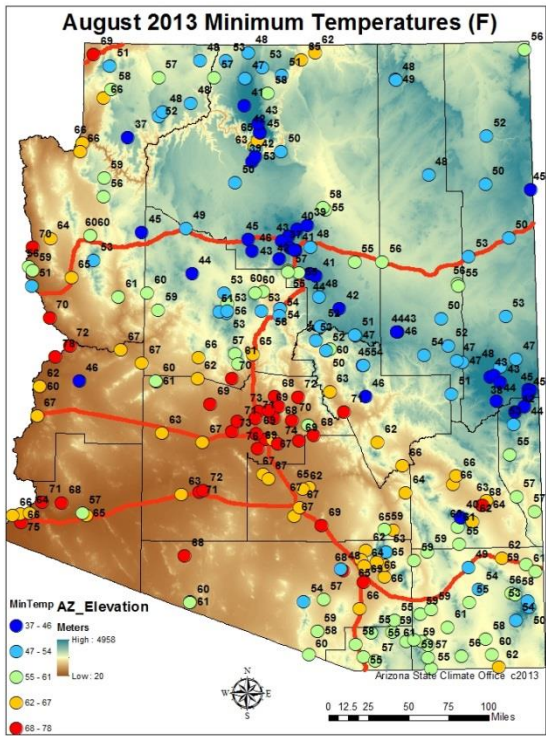
Data are from the National Weather Service and the National Climatic Data Center and are **preliminary**.

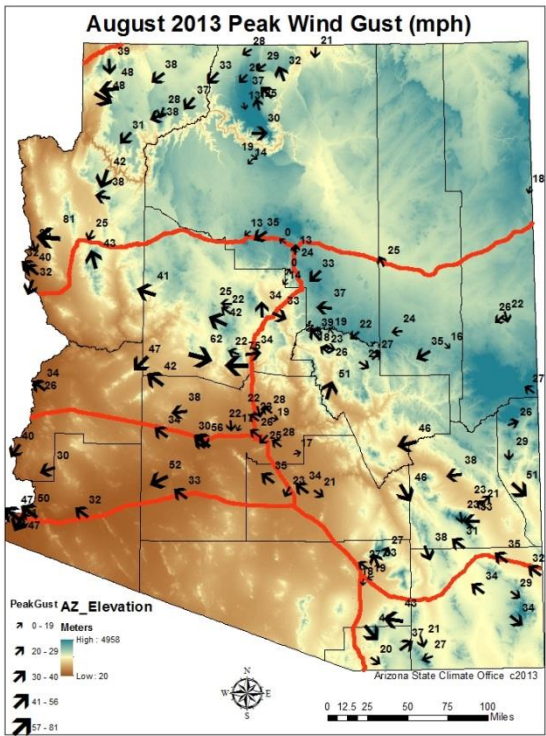
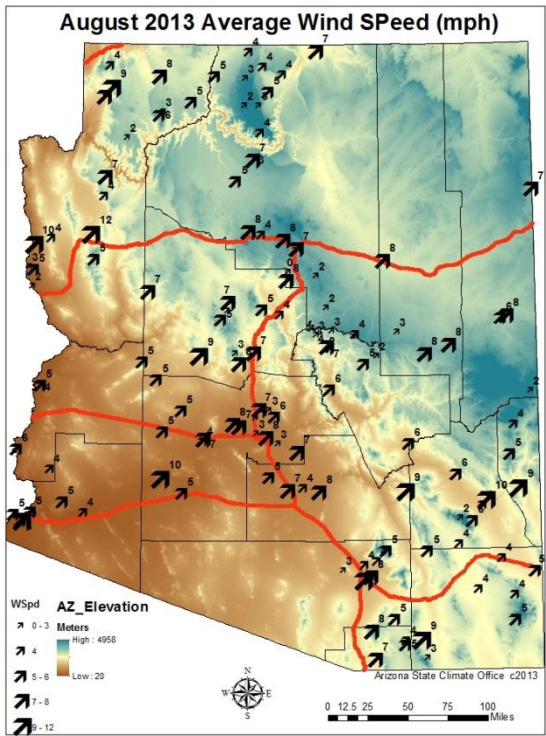
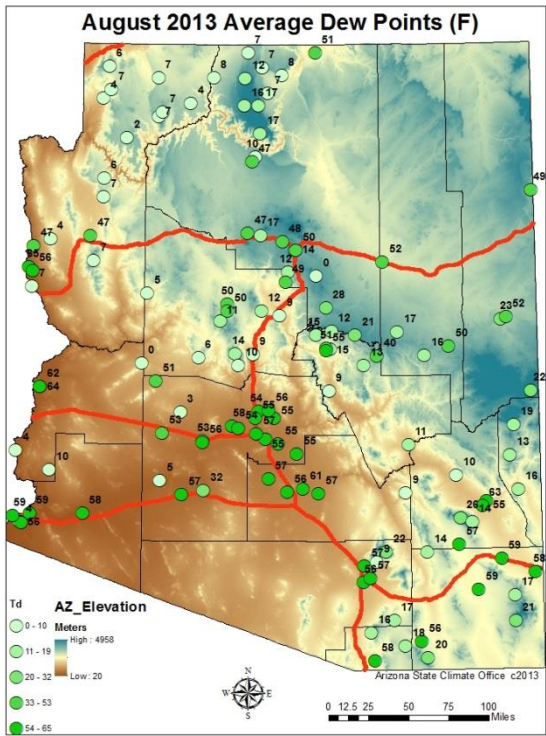
Winds for August:

Day	Phoenix		Flagstaff		Tucson	
	Avg	Max	Avg	Max	Avg	Max
1	10.2	32	M	M	9.5	32
2	8.4	22	5	23	8.3	22
3	5.9	19	3.7	21	7.8	23
4	5.6	15	3.2	22	6.5	19
5	7.6	27	1.7	18	10.3	29
6	7.3	22	2.8	20	6.1	26
7	6.5	21	2.7	14	4.6	23
8	6.4	18	4	23	5.8	20
9	8.1	25	4.8	30	8.5	33
10	7.2	26	6.7	28	5.3	17
11	5.6	23	4.6	22	8.1	28
12	7.1	26	4.3	24	7.3	24
13	6.2	22	4.7	29	7.2	21
14	6.6	22	3.6	23	7	36
15	6.6	24	2.7	17	5.8	25
16	7	25	2.4	30	7.1	24
17	7.4	41	3.3	25	8.2	61
18	7.8	39	1.7	21	6.9	33
19	6.4	18	2.6	23	4.3	27
20	8.1	36	3.9	21	9.3	40
21	5.4	19	5.5	24	6.6	19
22	7.2	24	2.3	18	6.8	29
23	6.5	23	4.1	26	8.2	37
24	9.1	26	1.5	13	10.5	41
25	8.1	26	2.3	14	5.7	23
26	7.4	56	5.3	22	4	34
27	6.4	22	4.3	22	8	30
28	10.8	32	2.3	20	12.1	32
29	6.5	26	2.7	18	5	24
30	5.9	39	3.4	17	4.2	14
31	4.6	22	2.2	17	5.5	24

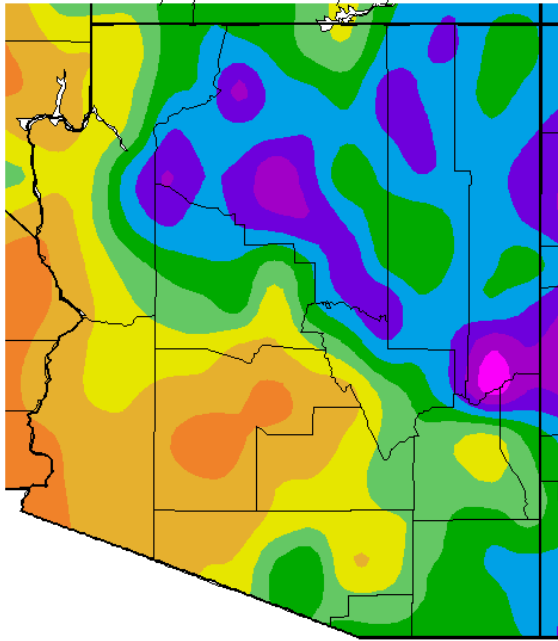
**Dew Points for August:
Daily Average Dew Point (°F):**

Day	Phx	Tuc	Flg
1	57	62	48
2	57	59	51
3	46	59	51
4	53	58	49
5	59	62	53
6	60	61	50
7	52	54	43
8	43	46	38
9	36	38	34
10	40	47	44
11	44	47	42
12	36	42	40
13	39	42	40
14	50	49	44
15	51	53	46
16	56	54	50
17	55	53	51
18	56	52	51
19	54	56	48
20	55	57	51
21	55	57	49
22	58	55	50
23	59	60	52
24	62	65	54
25	64	66	56
26	65	63	55
27	63	59	53
28	65	63	55
29	67	67	56
30	69	65	58
31	69	65	60

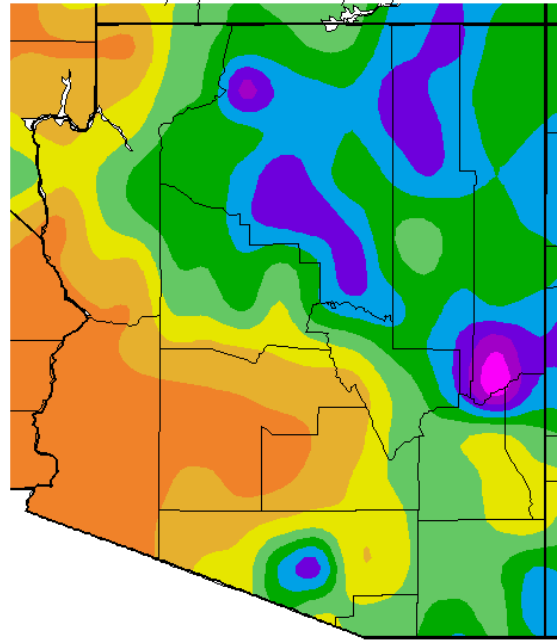




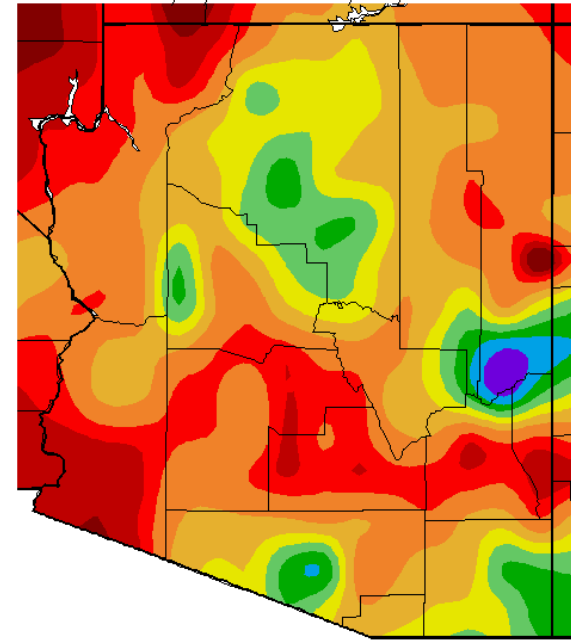
Av. Min. Temperature (deg. F)
8/1/2013 – 8/31/2013



Av. Max. Temperature (deg. F)
8/1/2013 – 8/31/2013



Total Precipitation (in.)
8/1/2013 – 8/31/2013

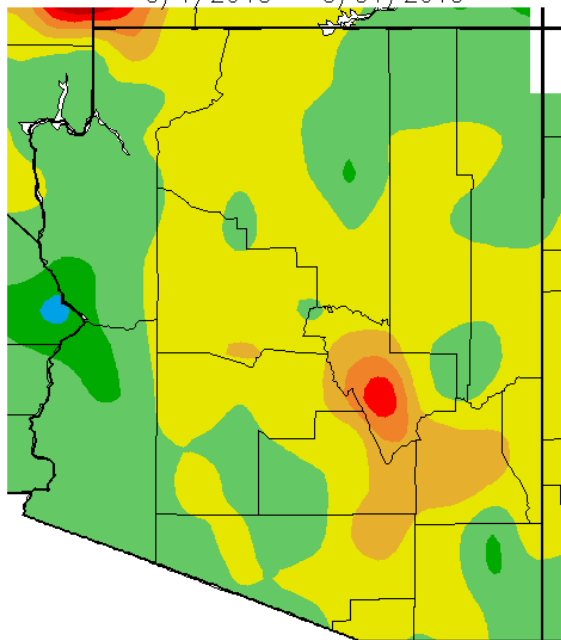


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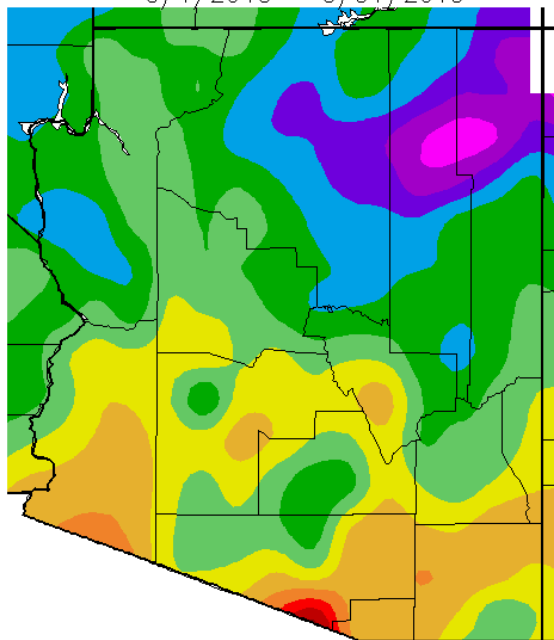
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Av. Min. Temperature dep from Ave (deg. F)
8/1/2013 – 8/31/2013



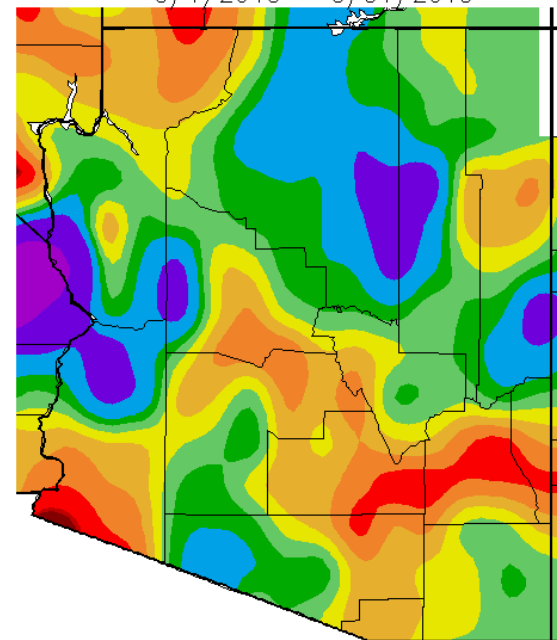
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Av. Max. Temperature dep from Ave (deg F)
8/1/2013 – 8/31/2013



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NOAA Regional Climate Centers

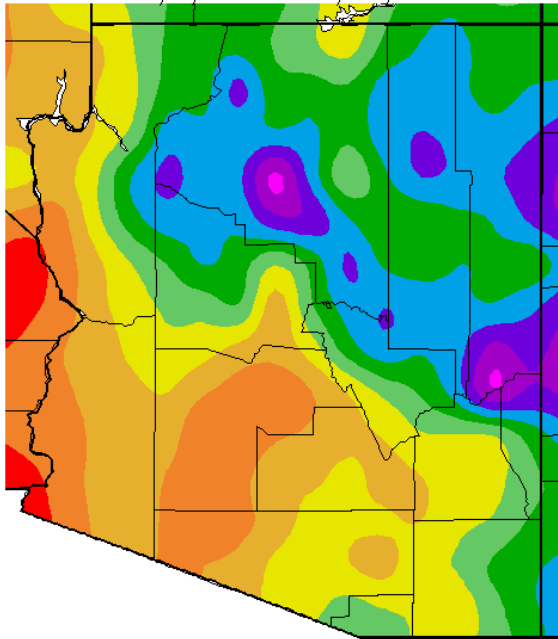
Percent of Average Precipitation (%)
8/1/2013 – 8/31/2013



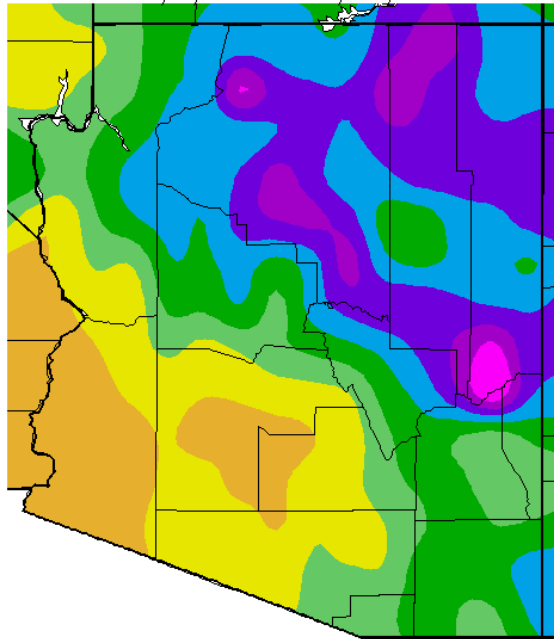
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August minimum temperatures were within 2 degrees F of normal statewide. Gila County was 2-6°F warmer than normal. Daytime temperatures were quite variable but mostly 0-4°F cooler than normal on the Colorado Plateau, and 0-3°F warmer than normal in the southern deserts. August precipitation is quite variable, with wetter than average conditions along the western border, on the Colorado Plateau, and in western Pima County. Drier than average conditions occurred in Pinal, Graham, Greenlee, and eastern Pima counties.

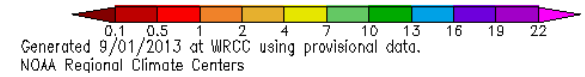
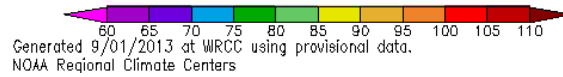
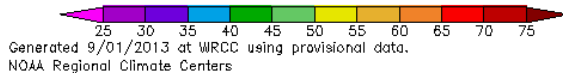
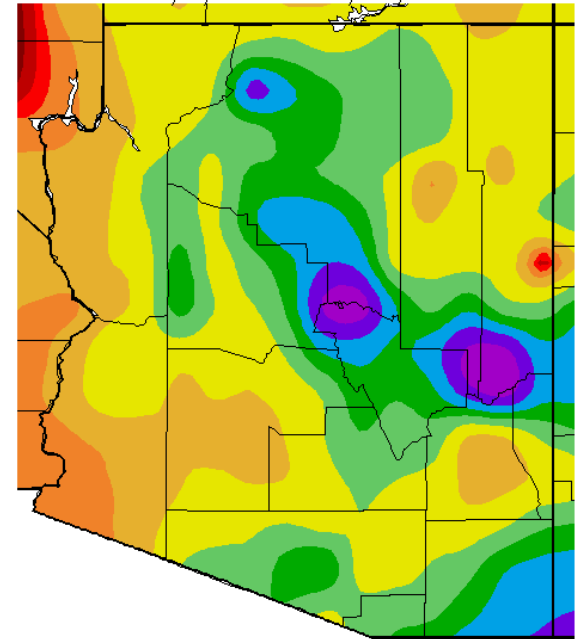
Av. Min. Temperature (deg. F)
1/1/2013 – 8/31/2013



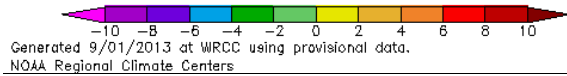
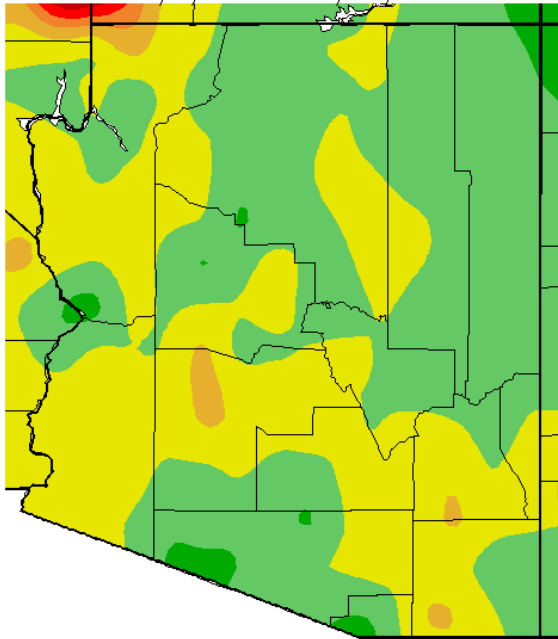
Av. Max. Temperature (deg. F)
1/1/2013 – 8/31/2013



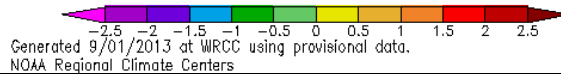
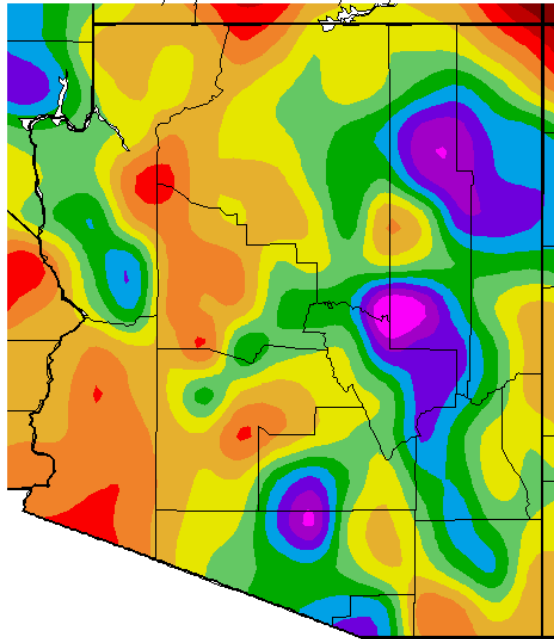
Total Precipitation (in.)
1/1/2013 – 8/31/2013



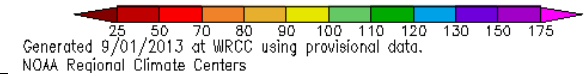
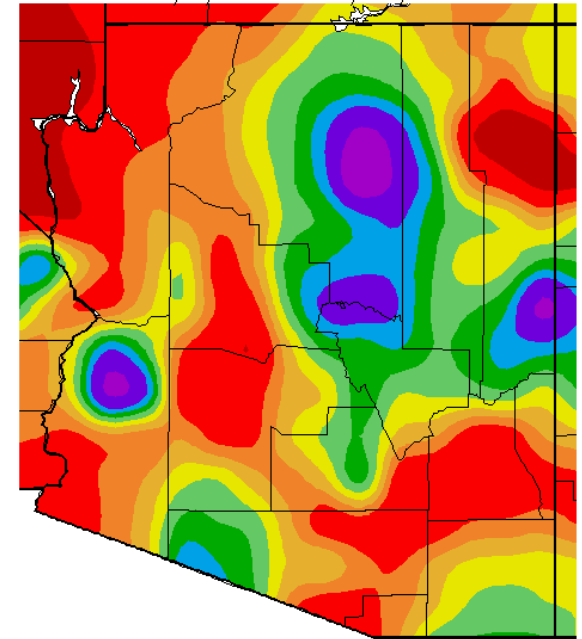
Av. Min. Temperature dep from Ave (deg. F)
1/1/2013 – 8/31/2013



Av. Max. Temperature dep from Ave (deg F)
1/1/2013 – 8/31/2013



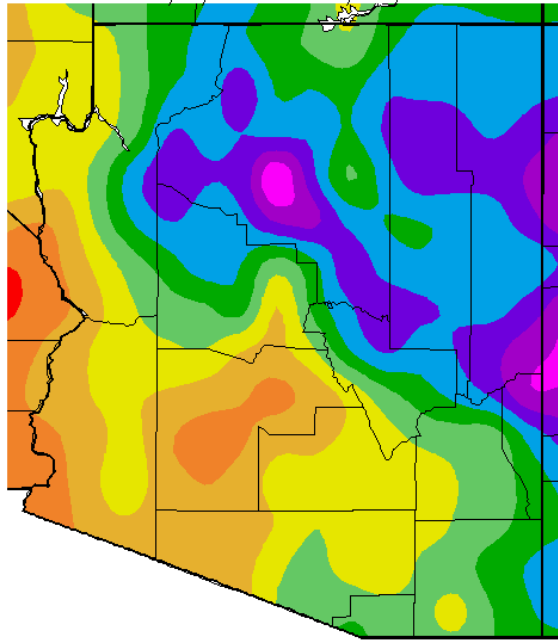
Percent of Average Precipitation (%)
1/1/2013 – 8/31/2013



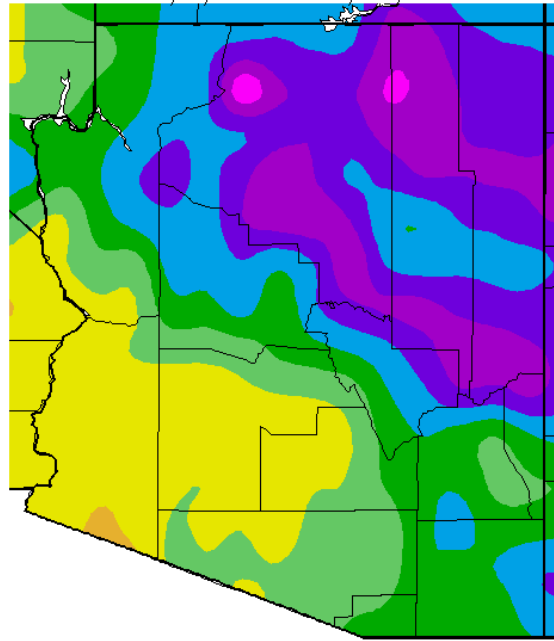
Calendar Year 2013

So far, nighttime temperatures for the calendar year have been within 2°F of normal for this time of year, with cooler temperatures on the Colorado Plateau, and warmer temperatures in the southwest deserts. Daytime temperatures have been more variable around the state. Yuma, La Paz, western Yavapai and along the Mohave-Coconino county border were 0.5-1.5°F warmer than normal while the eastern Gila southern and central Navajo, central Apache, central Pima and Pinal, were 0.5 to 1.5°F cooler than normal. Precipitation has been less than 70% of normal in Mohave, Cochise, western Maricopa, western Yavapai, eastern Pima, and northern Apache counties. The wet spot for the year is now east central Coconino County, though there was significant improvement to the dry conditions from the August rainfall in Coconino and southern Apache counties.

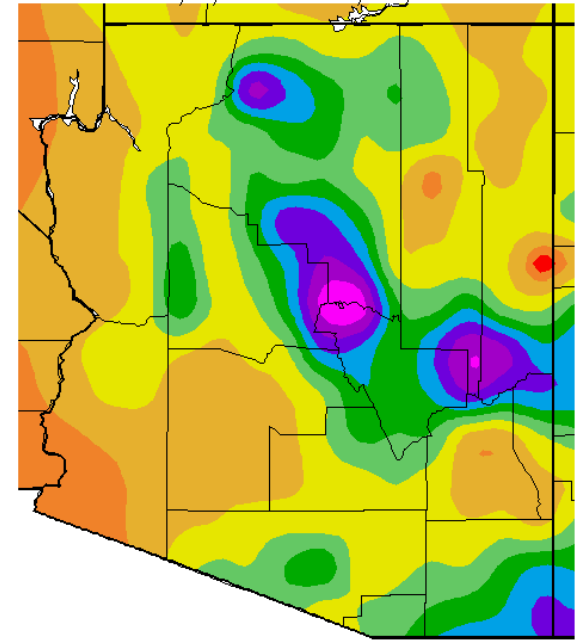
Av. Min. Temperature (deg. F)
10/1/2012 - 8/31/2013



Av. Max. Temperature (deg. F)
10/1/2012 - 8/31/2013



Total Precipitation (in.)
10/1/2012 - 8/31/2013

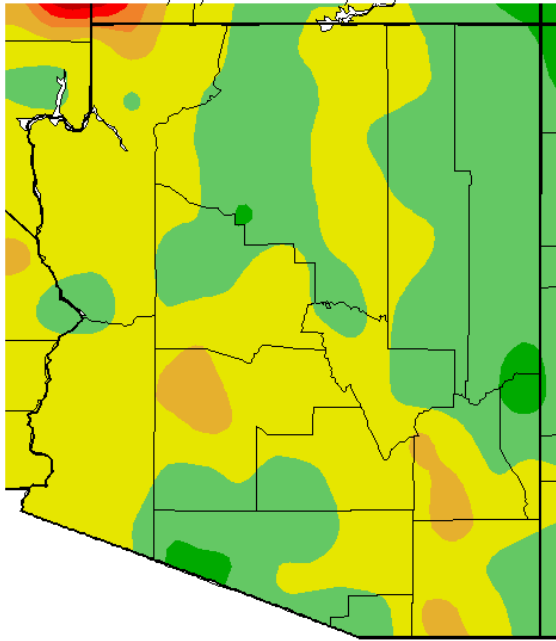


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Generated 9/01/2013 at WRCC using provisional data.
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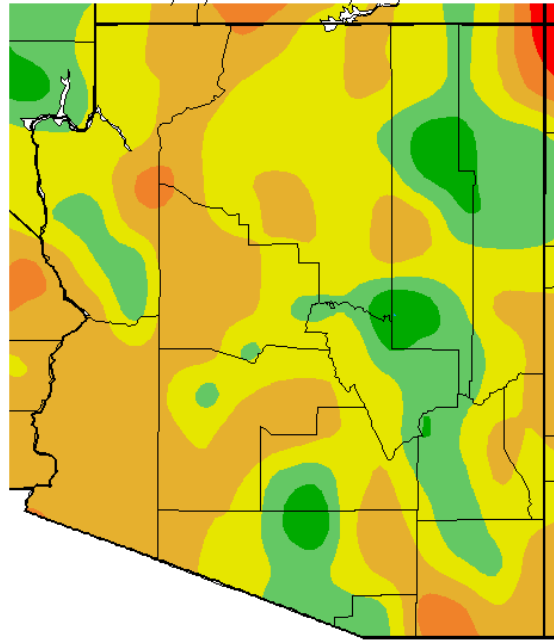
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NOAA Regional Climate Centers

Av. Min. Temperature dep from Ave (deg. F)
10/1/2012 – 8/31/2013



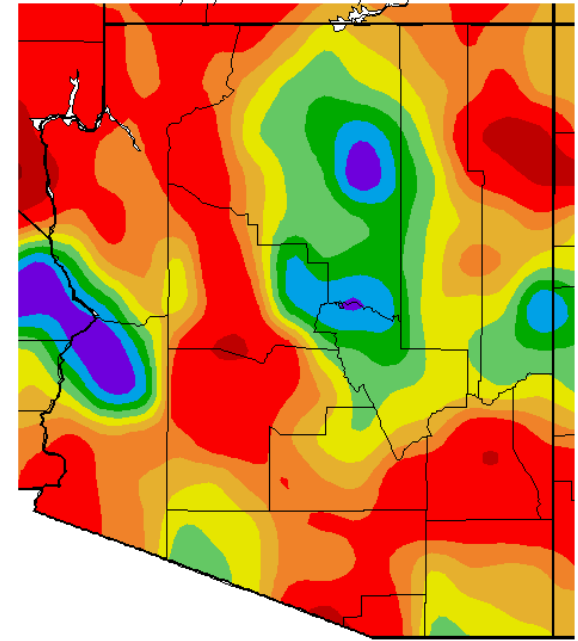
Generated 9/01/2013 at WRCC using provisional data.
NOAA Regional Climate Centers

Av. Max. Temperature dep from Ave (deg F)
10/1/2012 – 8/31/2013



Generated 9/01/2013 at WRCC using provisional data.
NOAA Regional Climate Centers

Percent of Average Precipitation (%)
10/1/2012 – 8/31/2013

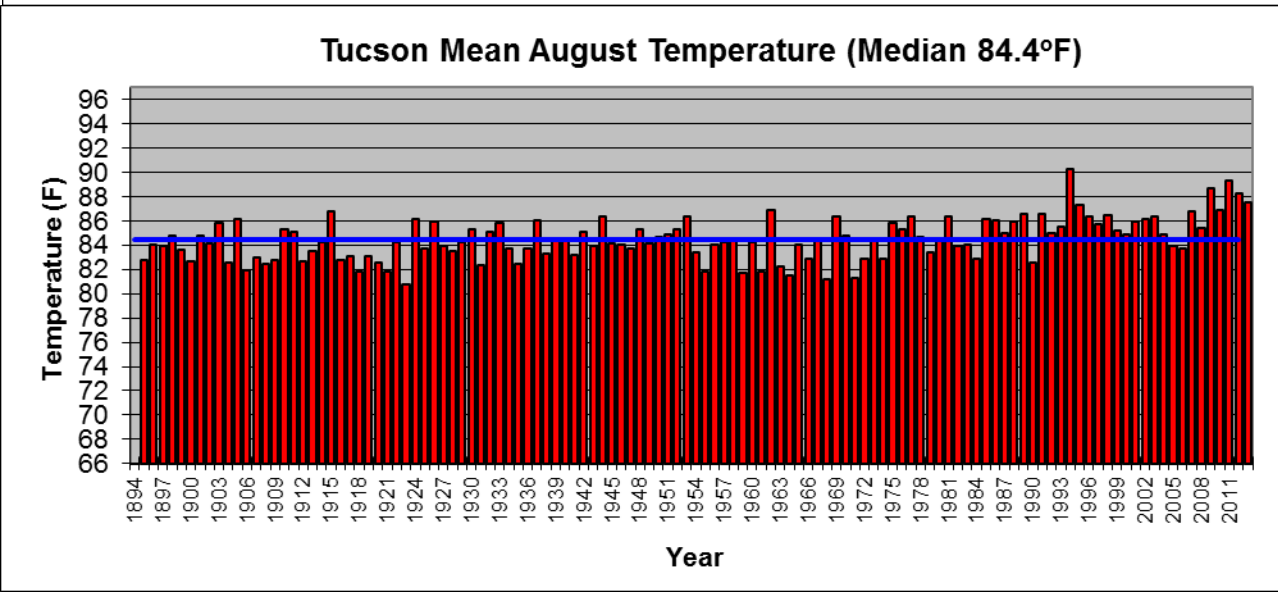
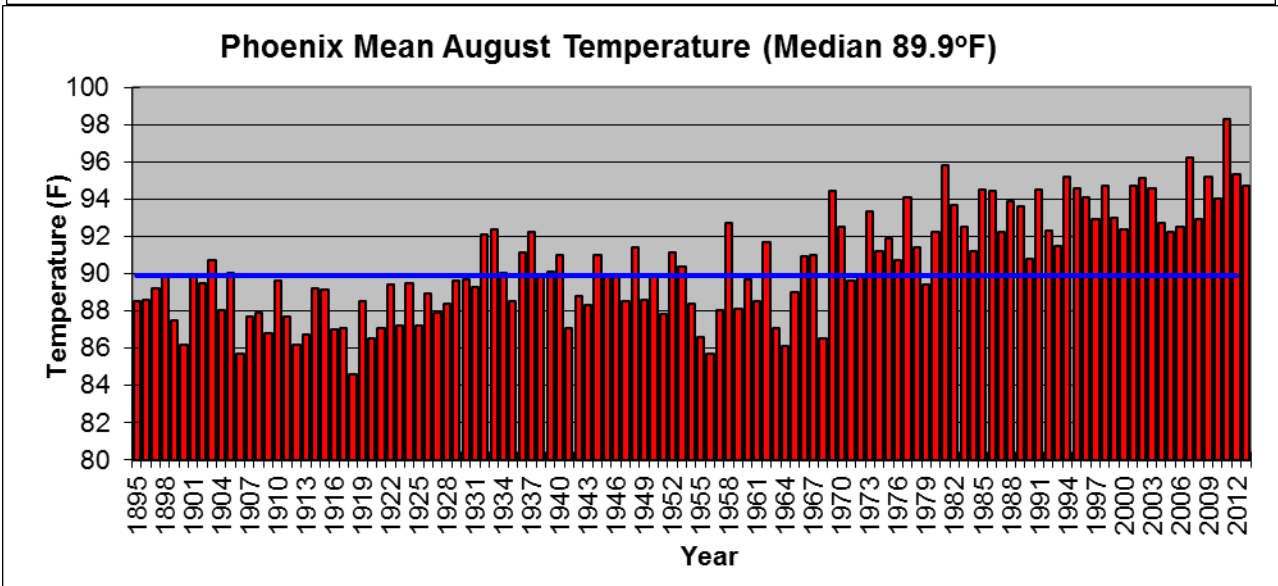
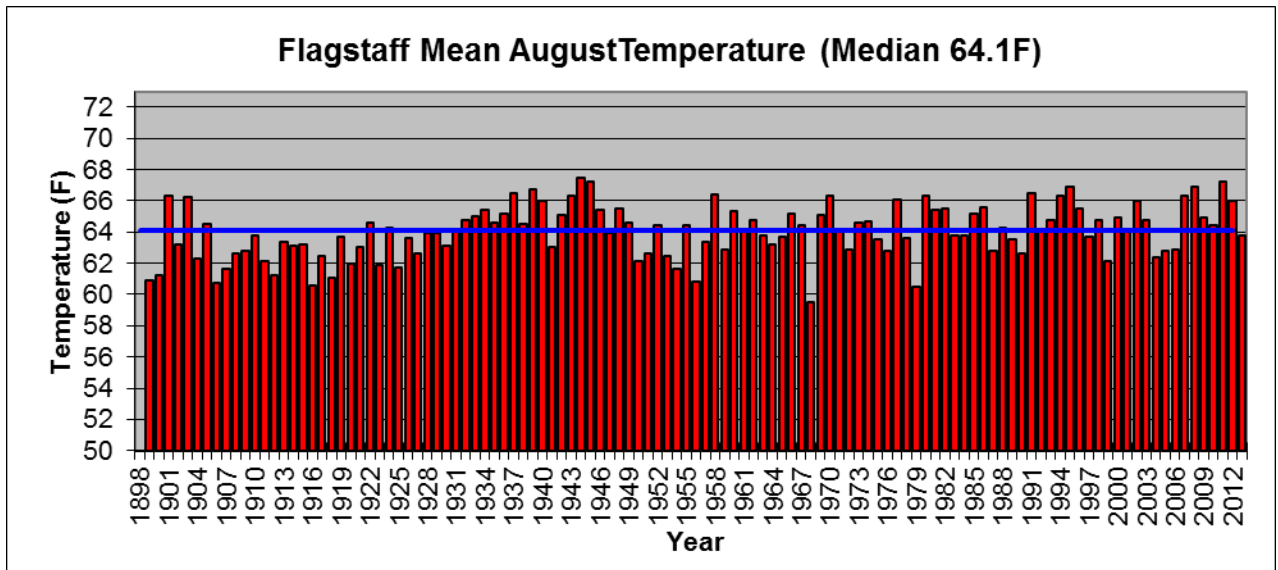


Generated 9/01/2013 at WRCC using provisional data.
NOAA Regional Climate Centers

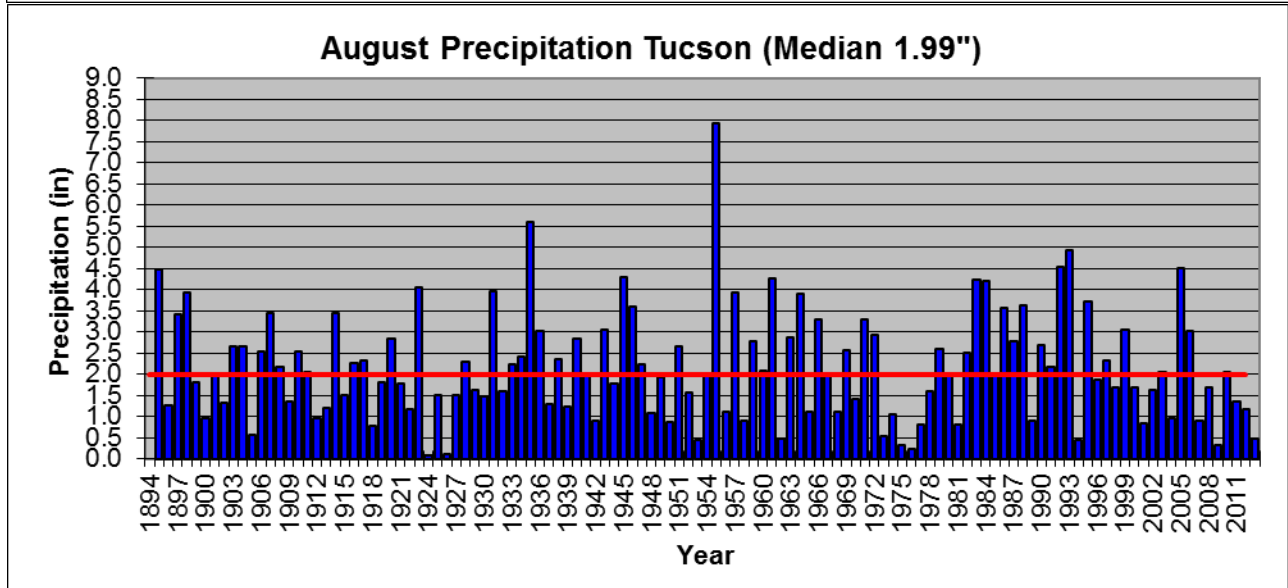
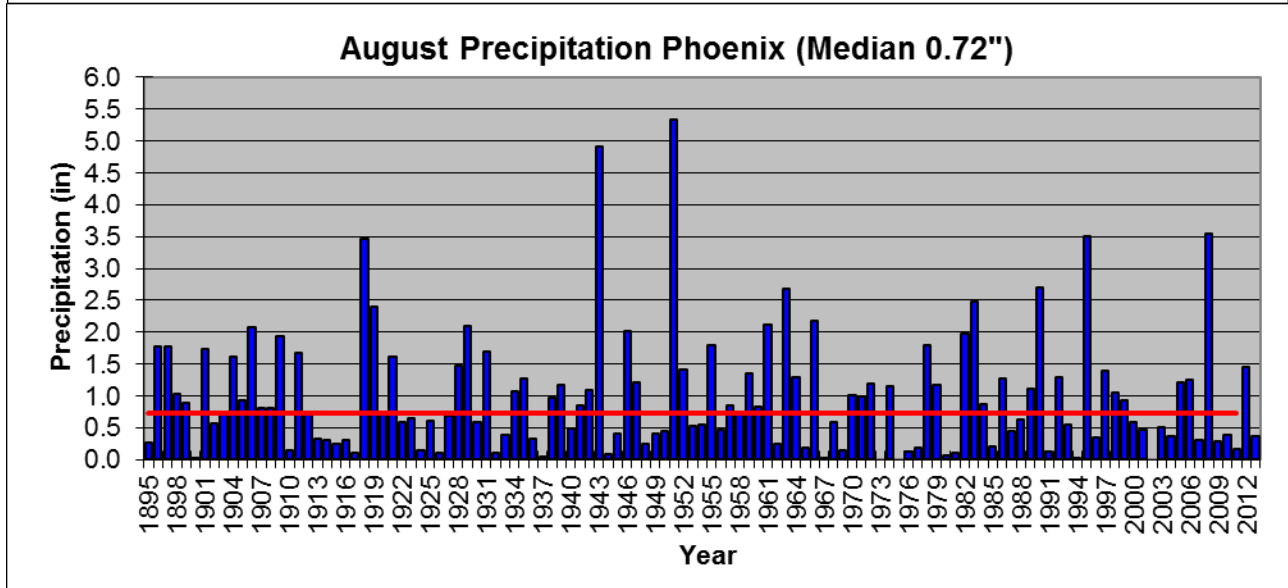
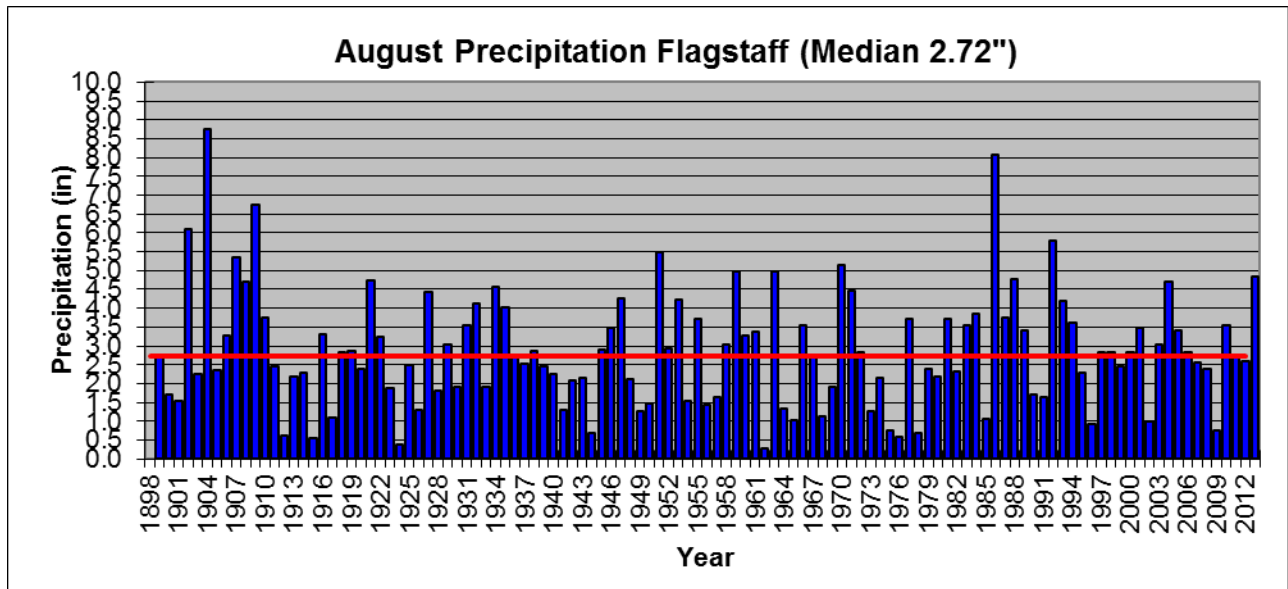
2013 Water Year

Minimum temperatures continue to be within 2°F of normal across the state, with the cooler locations in Coconino, Apache, Navajo, and western Pima counties. Maximum temperatures were within 2°F of normal in statewide, with warmer conditions in the west and cooler conditions in the northeast, south central and east central Arizona. The water year precipitation totals are above average in north central Arizona and La Paz County, but continue to be drier than average in western Maricopa, Yavapai, and Coconino counties as well as northern Mohave and Apache counties, all of Graham County, and eastern Pima County.

August Mean Temperature Graphs – Flagstaff, Phoenix, and Tucson 1895-2013:

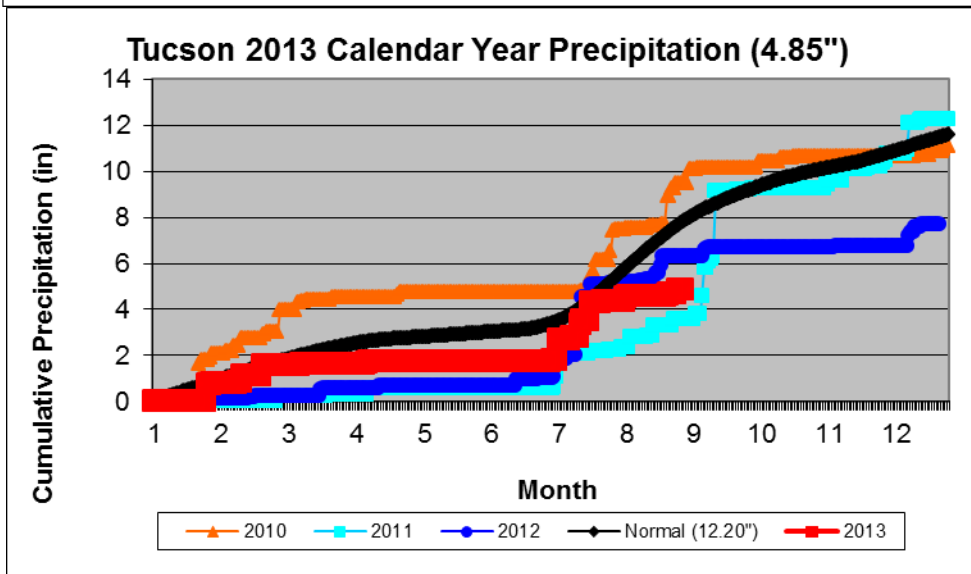
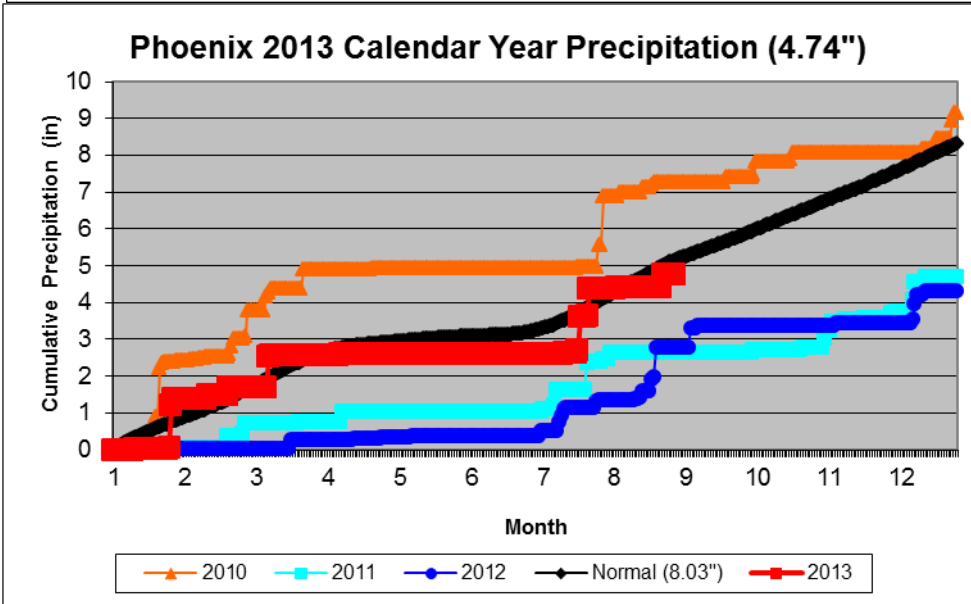
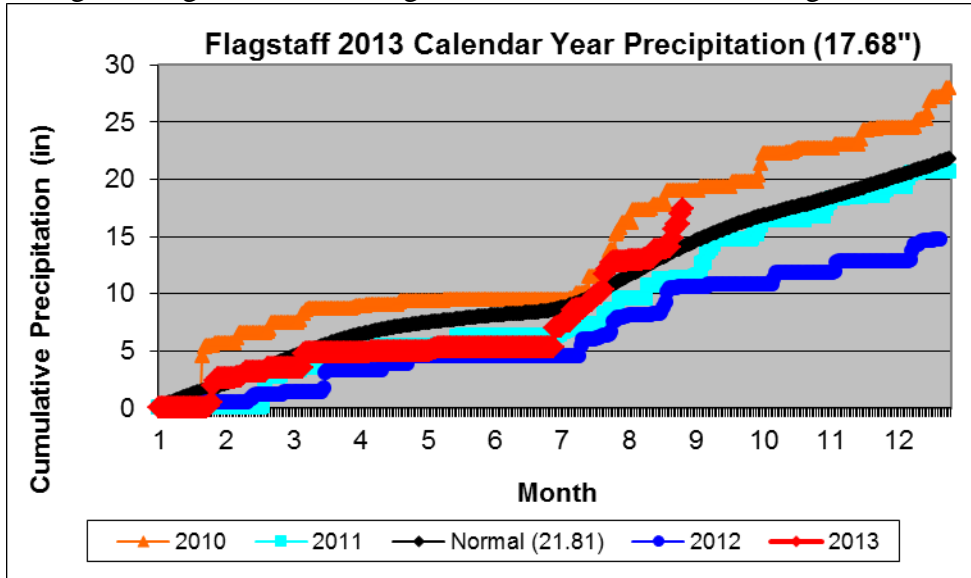


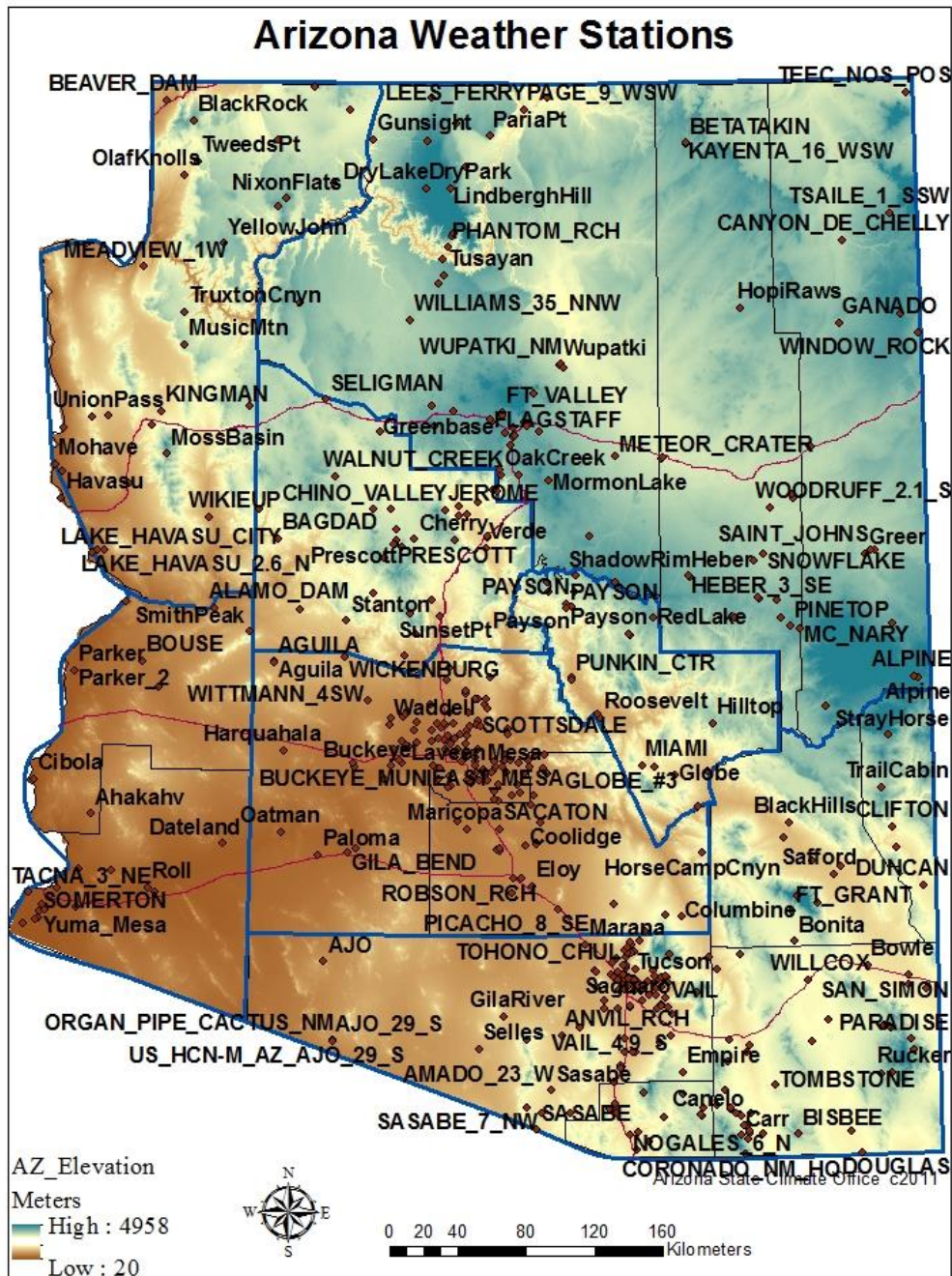
August Mean Precipitation Graphs – Flagstaff, Phoenix, and Tucson 1895-2013:



2013 Cumulative Precipitation Graphs – Flagstaff, Phoenix and Tucson:

Precipitation is above average in Flagstaff, near average in Phoenix, and below average in Tucson.





The downloadable normals and extremes calendars use the following abbreviations:

NORM = 30 year (1971-2000) average value (degrees Fahrenheit (F))

OBS = The temperature observation for that day this year

AVG = Average daily temperature

HI MAX = Highest maximum temperature for that day (F)

LO MAX = Lowest maximum temperature for that day (F)

LO MIN = Lowest minimum temperature for that day (F)

HI MIN = Highest minimum temperature for that day (F)

Mx PCP = Maximum precipitation for that day (inches)

Mx SNO = Maximum snowfall for that day (inches)