



Arizona Climate Summary

March 2013

Summary of conditions for February 2013

February 2013 Temperature and Precipitation Summary

February 1st – 16th: February began with a ridge of high pressure over the western U.S. yielding above average daily temperatures across Arizona from the 1st-7th. Daily average temperatures were 8°F above normal in Tucson on the 3rd, 9°F above normal in Phoenix on the 4th, and 5-6°F above normal in Flagstaff from the 1st-6th. A small shortwave trough moved into the state on the 3rd-4th bringing trace amounts of precipitation to Arizona with the greatest amount occurring in Payson (0.10"). A much more substantial low pressure system moved into the state on the 9th generating precipitation at mainly higher elevations. Precipitation totals included 0.22" in Flagstaff, 0.20" at Kingman AP, and 0.22" in Seligman. As an upper level trough deepened over the southwest, another surface low pressure system moved into the state on 10th and remained through the 12th. The greatest precipitation totals from this second system included 0.25" at Tsailo on the 10th, 0.32" at Petrified Forest NP on the 11th, and 0.20" at Youngtown on the 12th. Daily average temperatures dropped well below normal from the 9th-13th as the trough persisted. By the 15th-16th the upper level trough progressed into the eastern U.S. and a strong ridge of high pressure returned to the western U.S. The warmest high temperatures of 2013 thus far occurred on the 16th including a high of 81°F in Yuma, 80°F in Phoenix, 79°F in Blythe, and 75°F in Douglas.

February 17th – 31st: From the 17th-19th, the ridge of high pressure advanced eastward and a small shortwave trough travelled through the southwest on the 18th keeping daily average temperatures close to normal. By the 19th, a strong surface low pressure system moved into the Pacific Northwest and an upper level trough strengthened over the western U.S. The surface system moved southeast into Arizona on the 20th and brought cold polar air to the state. Tucson was 13°F below normal on the 20th and 21st, Phoenix was 11°F below normal on the 20th and 12°F below normal on the 21st, Douglas was 19°F below normal on the 21st, and Flagstaff was 13°F below normal on the 21st. The cold air in conjunction with moisture in the lower atmosphere helped to bring snow levels below 3000ft. On the 20th, Tucson received 2" of snow in the city and greater accumulation in the outlying foothills, and Phoenix received an accumulation of graupel (soft hail) in certain parts of the valley. Precipitation totals on the 20th included 0.67" at Scottsdale AP, 0.51" in Carefree, 0.49" in Tucson, 0.35" in Wickenburg, and 0.33" in Flagstaff. Precipitation continued through the 22nd as the storm system slowly departed Arizona. Precipitation totals on the 21st included 1.65" in Bisbee, 0.45" in Camp Verde, and 0.19" at Grand Canyon AP. Another low pressure system moved through northern Arizona on the 24th, however it did not produce substantial precipitation amounts. Daily average temperatures remained below normal across Arizona as an upper level trough persisted up to the 28th.

In This Issue: Overview of February, graphs of the February daily maximum and minimum temperatures, precipitation, mean daily dew points for Flagstaff, Phoenix, and Tucson; February climate statistics, maps of mean monthly maximum and minimum temperatures, precipitation, dew points, wind speeds for February; and graphs of the mean February 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. 19 of this report for calendar abbreviations.

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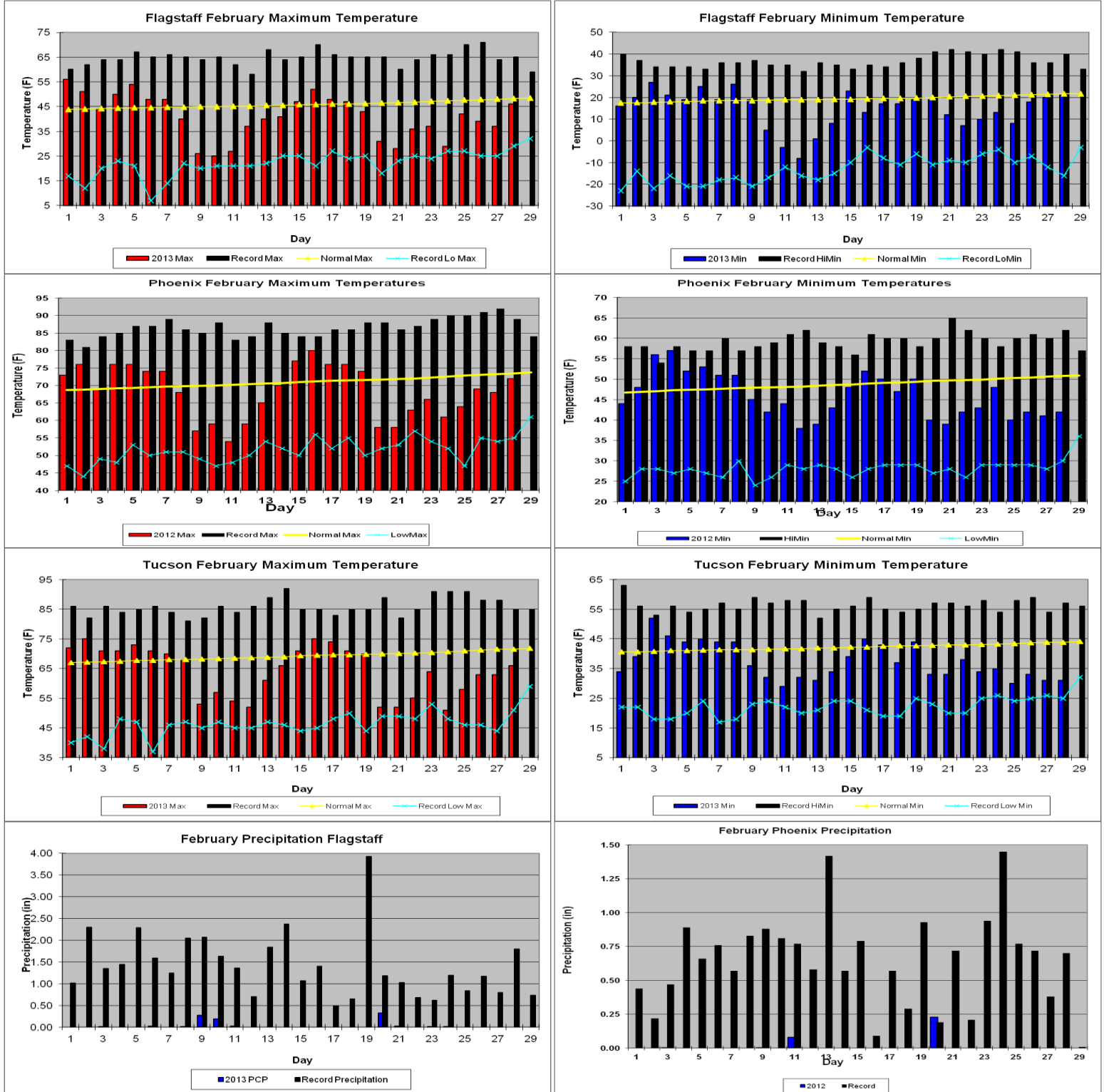


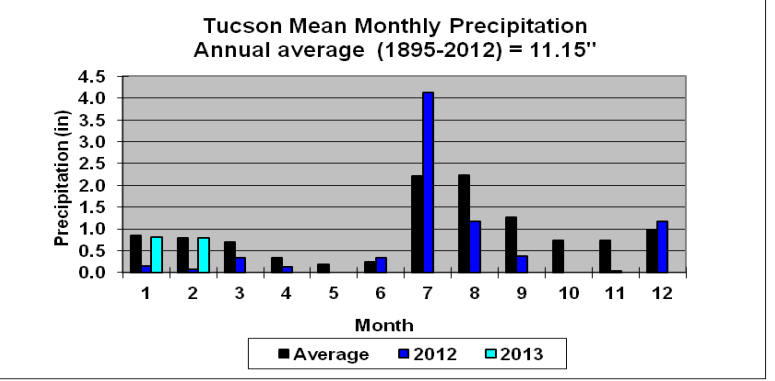
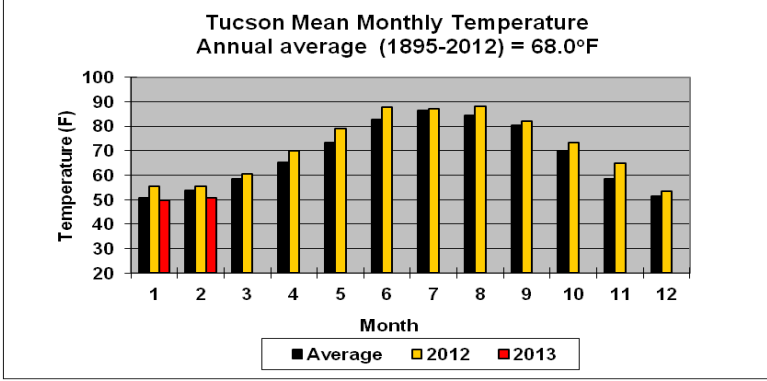
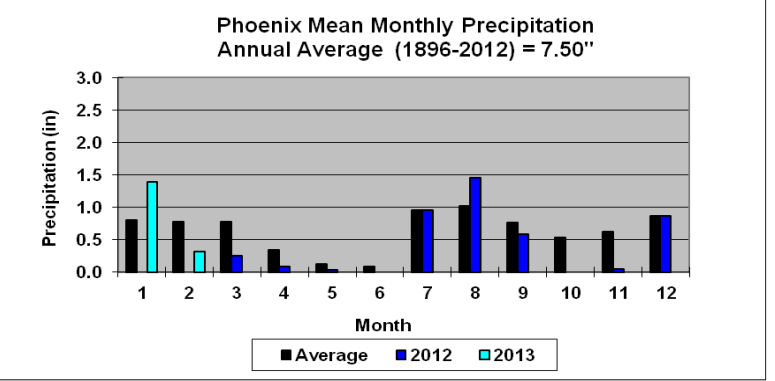
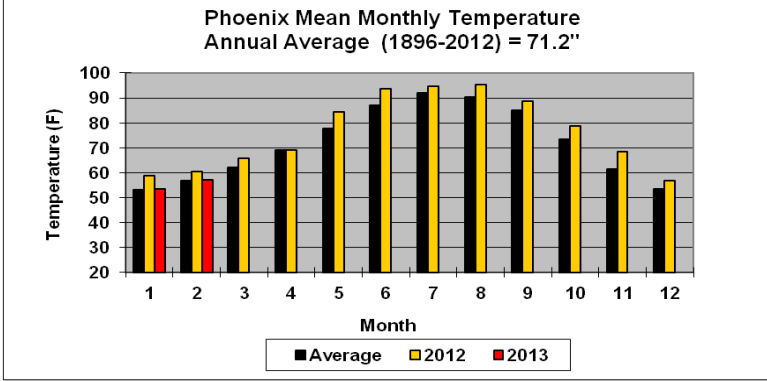
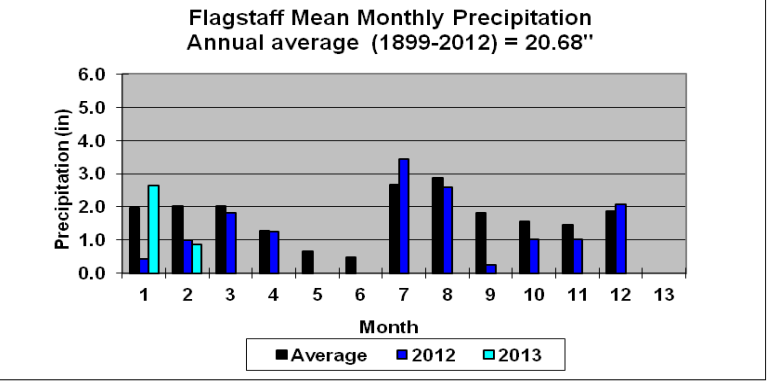
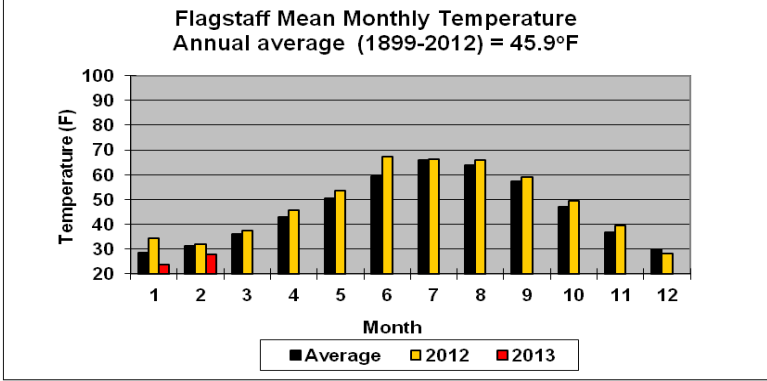
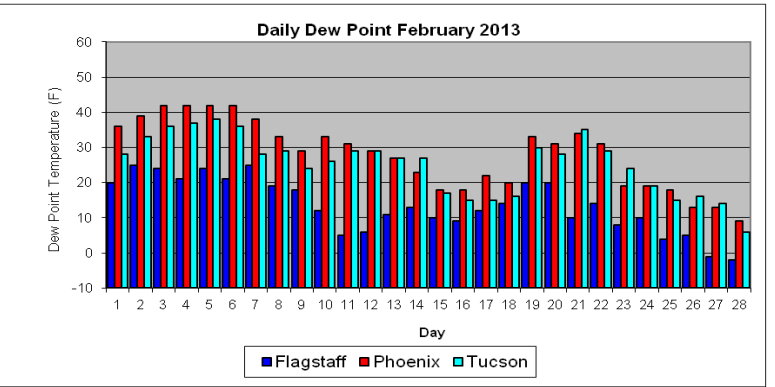
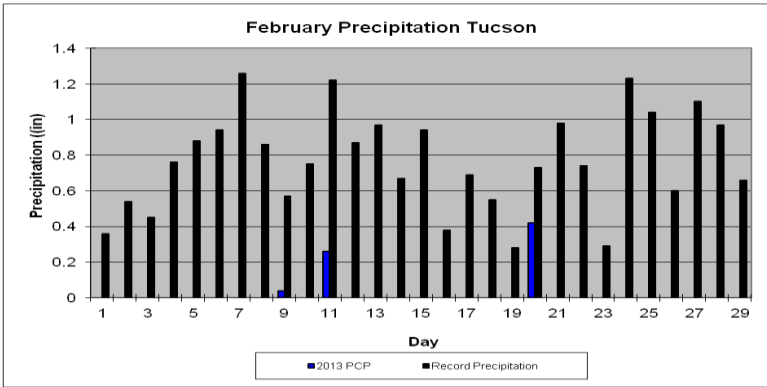
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Data are preliminary and are from the National Weather Service Forecast Offices in Flagstaff, Phoenix and Tucson.

****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.

February 2013 Daily Temperature, Precipitation, & Dew Point for Flagstaff, Phoenix, and Tucson





FLAGSTAFF CLIMATE STATISTICS

February 2013

This February was the 27th coolest and 26th driest on record.

Avg Max Temp (F)	41.0	Normal	44.8
Avg Min Temp (F)	14.7	Normal	19.3
Avg Mean Temp (F)	27.9	Normal	32.1
Departure from Normal (F)	-4.2		

Highest Monthly Avg Temp (F)	38.2 in 1947
Lowest Monthly Avg Temp (F)	19.5 in 1939

Highest Temp this month (F): 56 on 1st
 Lowest Temp this month (F): -8 on 12th

Record High (F):	71 on 02/26/1986
Record Low (F):	-23 on 02/01/1985

No temperature or precipitation records this month:

Flagstaff Number of Days of:

Minimum Temp 20°F or higher	8
Minimum Temp 10°F or lower	8
Maximum Temp 50°F or higher	5
Maximum Temp 30°F or lower	5

Heating Degree Days	1031	Normal	923
Cooling Degree Days	0	Normal	0
Degree base 65°F			

Total February Precipitation	0.86"
Normal February Precipitation	2.16"
Departure from normal	-1.30"
Greatest 24-Hr Precipitation	0.33" on 2/20
Total Precipitation Year-to-Date	3.50"
Departure from Normal	-0.71"

Number of Days:

Clear	19
Partly Cloudy	5
Cloudy	4

Greatest February Precipitation	10.05" in 1993
Least February Precipitation	0.001" in 1967

Average Wind Speed	6.9 mph
Highest Peak Gust	51 mph from 220° on 8 th

PHOENIX CLIMATE STATISTICS

February 2013

This February had no significant ranking for temperature or precipitation.

Avg Max Temp(F)	68.3	Normal	70.7
Avg Min Temp(F)	46.0	Normal	48.7
Avg Mean Temp (F)	57.1	Normal	59.7
Departure from Normal (F)	-2.6		

Highest Monthly Avg Temp (F)	66.0 in 1991
Lowest Monthly Avg Temp (F)	48.5 in 1939

Highest Temp this month (F): 80 on 16th
 Lowest Temp this month (F): 38 on 12th

Record High (F):	92 on 02/27/1986
	02/25/1921
Record Low (F):	24 on 02/08/1933
	02/07/1899

Temperature or precipitation records this month:
 3rd HiMin 56 set, previous record 54 in 2010
 20th Precip 0.23", previous record 0.19" in 1969

Phoenix Number of Days of:

Minimum Temp 40°F or lower	3
Minimum Temp 50°F or higher	9
Maximum Temp 60°F or lower	6
Maximum Temp 70°F or higher	13

Heating Degree Days	215	Normal	163
Cooling Degree Days	3	Normal	15
Degree base 65°F			

Total February Precipitation	0.31"
Normal February Precipitation	0.92"
Departure from normal	-0.61"
Greatest 24-Hr Precipitation	0.23" on 20 th
Total Precipitation Year-to-Date	1.70"

Departure from Normal -0.13"

Least February Precipitation 0.00" in 1898, 1910, 1912, 1924, 1967, 1972, 1984, 1989, 2000, 2002, 2006

Number of Days:

Clear 15
Partly Cloudy 12
Cloudy 1

Average Wind Speed 5.3 mph
Highest Peak Gust 38 mph from 340° on 24th

Greatest February Precipitation 4.61" in 1905

TUCSON CLIMATE STATISTICS
February 2013

This February was the 20th coolest on record and had no significant ranking for precipitation

Cooling Degree Days 0 Normal 3
Degree base 65°F

Avg Max Temp(F) 64.2 Normal 68.5
Avg Min Temp(F) 37.4 Normal 42.2
Avg Mean Temp(F) 50.8 Normal 55.3
Departure from Normal (F) -4.5

Total February Precipitation 0.79"
Normal February Precipitation 0.86"
Departure from normal -0.07"
Greatest 24-Hr Precipitation 0.49" on 02/20
Total Precipitation Year-to-Date 1.53"
Departure from Normal -0.27"

Highest Monthly Avg Temp (F) 61.1 in 1957
Lowest Monthly Avg Temp (F) 45.3 in 1903

Greatest February Precipitation 4.15" in 1905
Least February Precipitation 0.00" in 1895, 1902, 1903, 1910, 1924, 1935, 1972, 1974, 1984, 2006

Highest Temp this month (F): 75 on 2nd, 16th
Lowest Temp this month (F): 29 on 11th

Record High (F): 92 on 02/14/1957
Record Low (F): 17 on 02/07/1899

Number of Days:

Clear 20
Partly Cloudy 4
Cloudy 4

No temperature or precipitation records this month:

Tucson Number of Days of:

Minimum Temp 30°F or lower 2
Minimum Temp 40°F or higher 9
Maximum Temp 60°F or lower 9
Maximum Temp 70°F or higher 12

Average Wind Speed 6.7 mph
Highest Peak Gust 38 mph from 340° on 24th

Heating Degree Days 391 Normal 273

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

Winds for February:

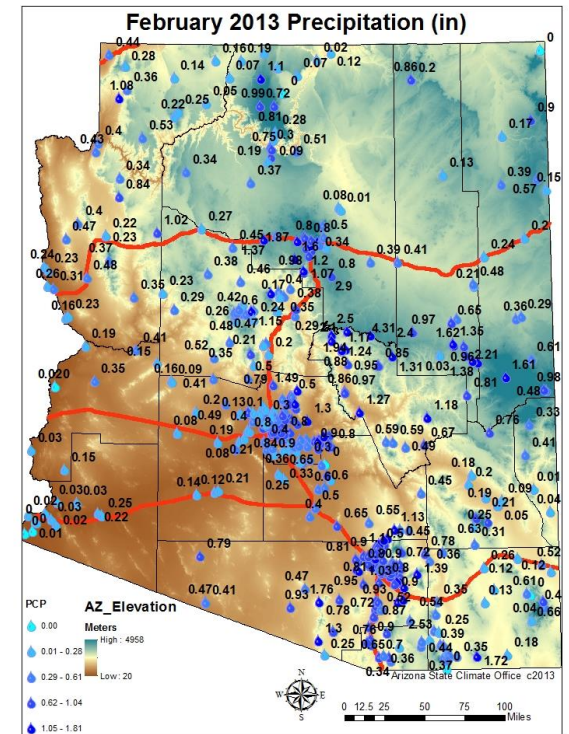
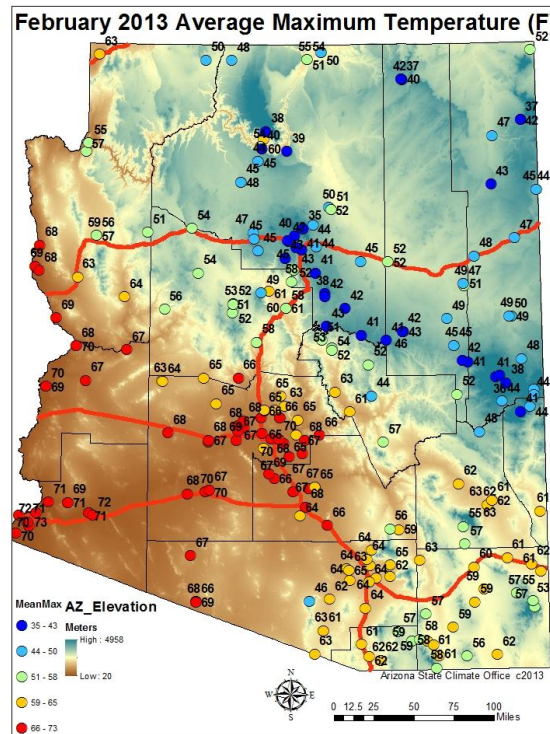
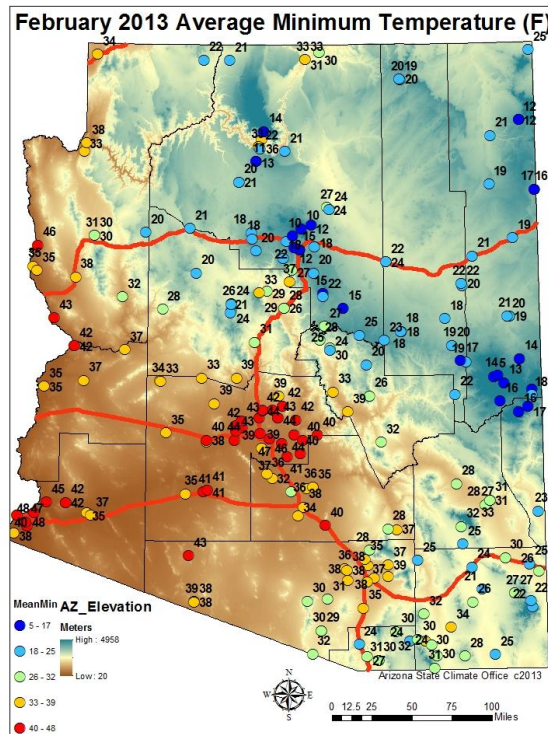
Day	Phoenix		Flagstaff		Tucson	
	Avg	Max	Avg	Max	Avg	Max
1	3.2	13	1.9	16	4.8	15
2	3.5	14	2.8	16	6.2	20
3	2.9	15	2.9	15	4.1	14
4	1.3	13	3.8	18	5.1	16
5	3.7	15	3.1	20	6.9	20
6	4.6	14	3.9	26	6.8	22
7	3.9	12	2	18	5.2	17
8	8.5	28	15.9	51	10.2	29
9	9	36	13.7	33	8.5	28
10	4.9	14	9.9	30	5.8	18
11	6.1	26	1.7	17	6.5	23
12	4	15	1.6	20	5.3	14
13	2.7	14	3.5	20	4	14
14	2.5	15	8.2	31	6	16
15	5	21	12	29	4	23
16	6.4	24	3.8	16	13.4	36
17	5.6	22	8.8	36	8.3	25
18	5.2	13	3.1	21	5.3	17
19	8.7	28	1.3	38	11.2	36
20	8.9	29	11.4	33	10.9	38
21	5.1	16	10	24	4.9	20
22	4.6	21	4.7	20	5.4	17
23	5.5	14	10.6	33	4.1	17
24	13.6	38	8.5	35	10.7	38
25	3.3	12	7.2	26	3.7	16
26	6.8	18	7.5	29	7.7	19
27	3.8	18	11.3	26	5.6	20
28	4.6	18	9.2	29	5.7	21

Dew Points for February:

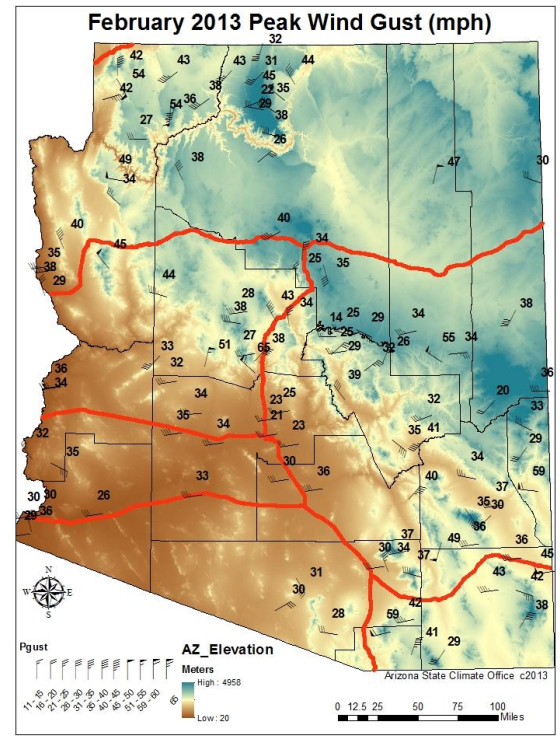
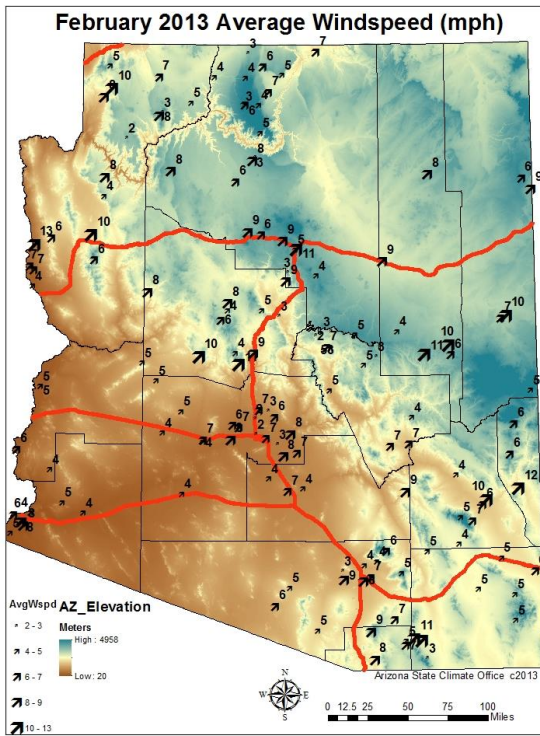
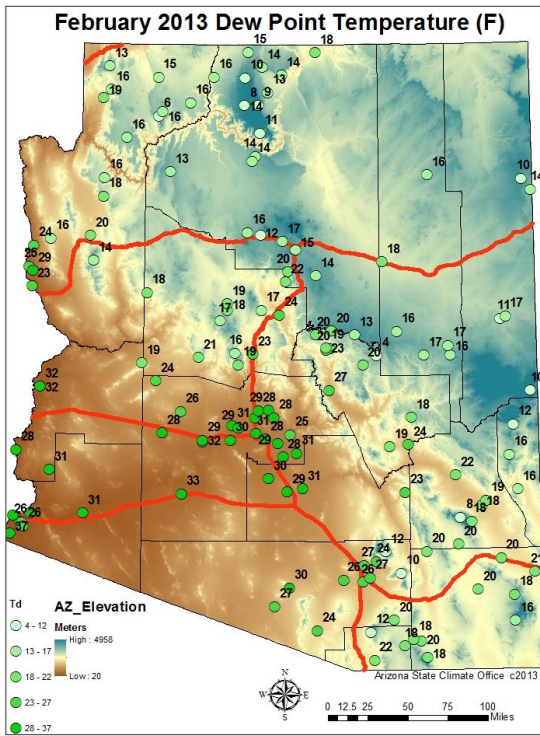
Daily Average Dew Point (°F):

Day	Phx	Tuc	Flg
1	36	28	20
2	39	33	25
3	42	36	24
4	42	37	21
5	42	38	24
6	42	36	21
7	38	28	25
8	33	29	19
9	29	24	18
10	33	26	12
11	31	29	5
12	29	29	6
13	27	27	11
14	23	27	13
15	18	17	10
16	18	15	9
17	22	15	12
18	20	16	14
19	33	30	20
20	31	28	20
21	34	35	10
22	31	29	14
23	19	24	8
24	19	19	10
25	18	15	4
26	13	16	5
27	13	14	-1
28	9	6	-2

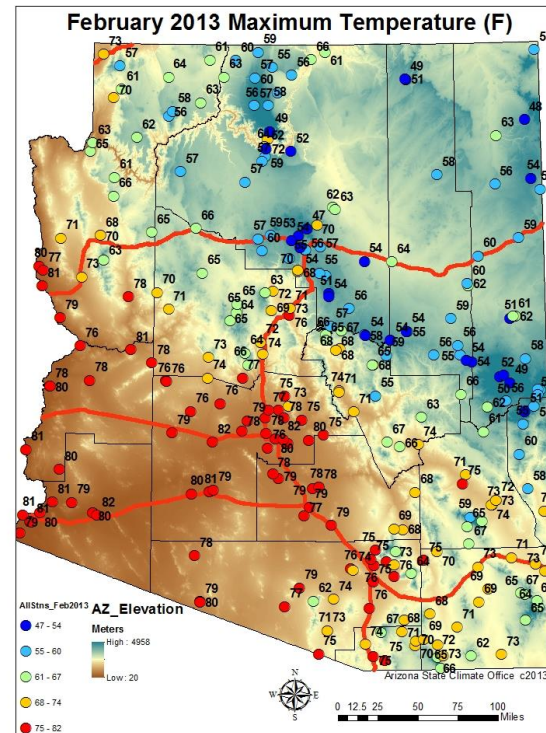
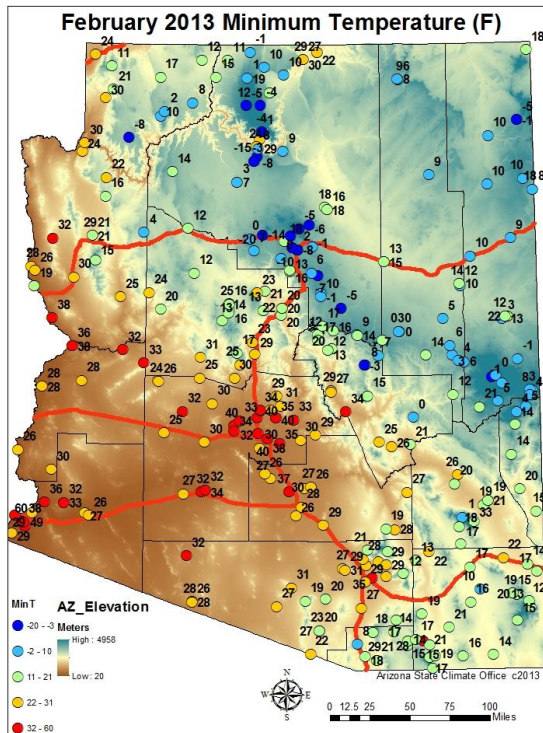
February 2013 Temperature, Dew Point, Wind Speed, and Precipitation Maps are based on **preliminary data** from the National Weather Service, the Arizona Meteorological Network (AZMet), operated by the University of Arizona College of Agriculture Cooperative Extension and the RAWS (Remote Automated Weather Station) network operated by the Bureau of Land Management and Forest Service, and the CoCoRaHS (Community Collaborative Rain, Hail and Snow) Network.



Average nighttime temperatures ranged from 5°F at Sunrise Mountain, to 48°F at Yuma. Average daytime temperatures ranged from 35°F at Snowslide Canyon, to 73°F at Yuma. Precipitation values ranged from less than an inch at many locations in the southwest to 4.31" at Promontory.

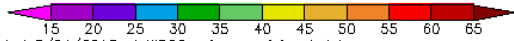
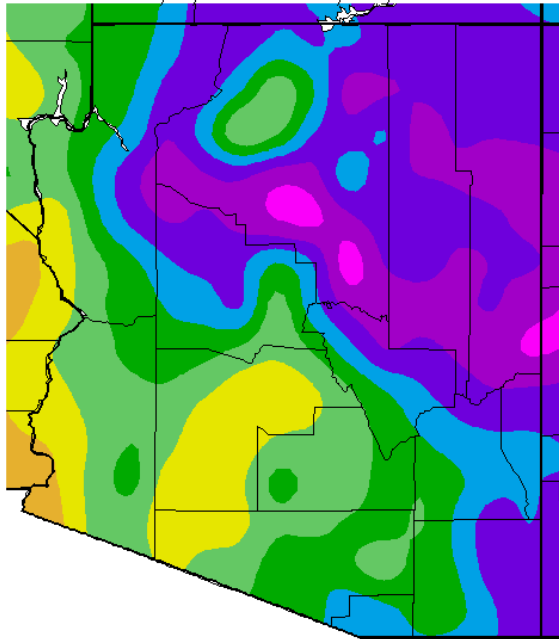


Average monthly dew points ranged from 4°F at Red Lake, to 37°F at Yuma. As in most months, average winds were light, with 13 mph as the highest average at Laughlin-Bullhead City. The highest peak wind gust was 65 mph at Humbug Creek. Peak wind gusts blew in all different directions, which is typical as the high winds are generally attributed to thunderstorm outflows, which have no dominant direction. The arrows point to the direction the winds blow from.



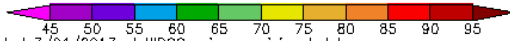
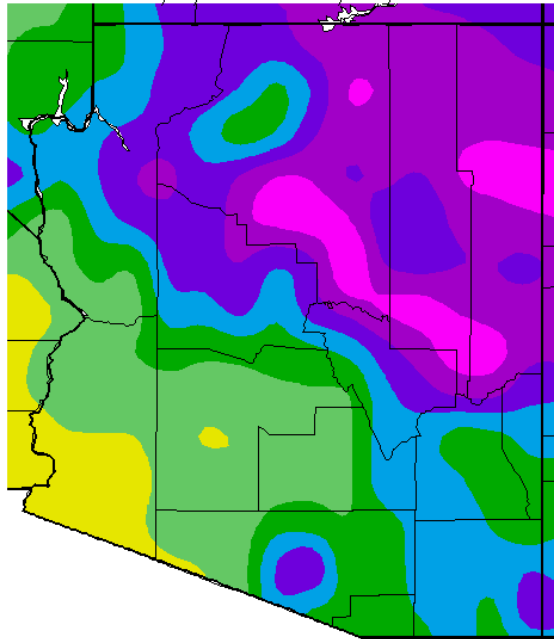
Lowest temperature in February was -20°F recorded at Greenbase. The highest daytime temperature of the month was 82°F recorded at Tempe.

Av. Min. Temperature (deg. F)
2/1/2013 – 2/28/2013



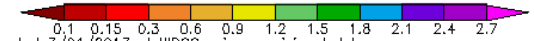
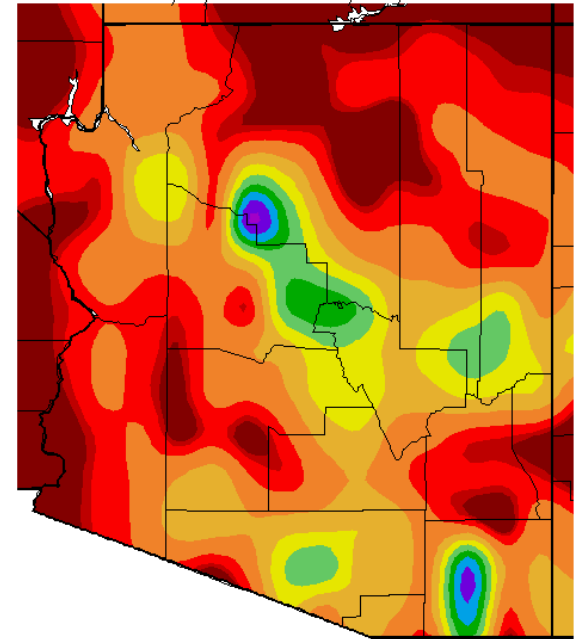
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Av. Max. Temperature (deg. F)
2/1/2013 – 2/28/2013



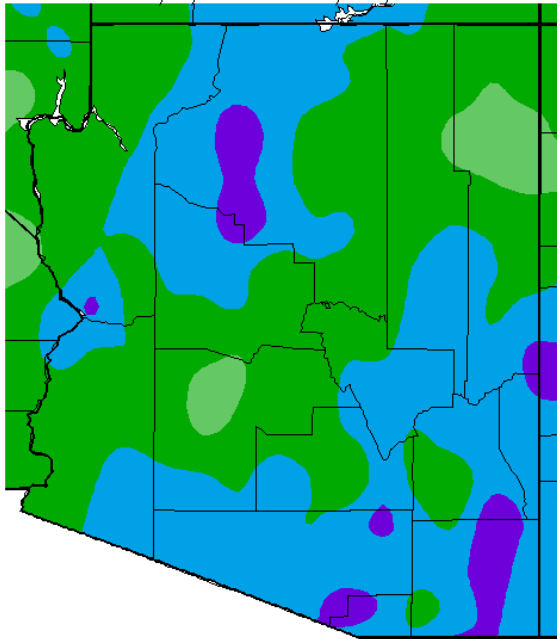
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Total Precipitation (in.)
2/1/2013 – 2/28/2013



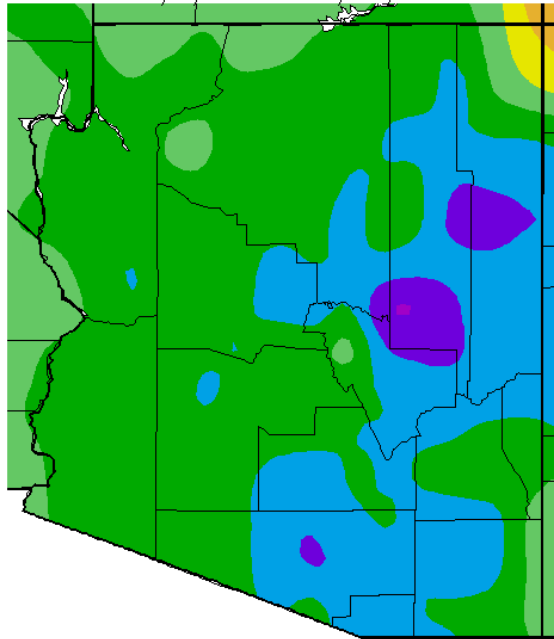
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Av. Min. Temperature dep from Ave (deg. F)
2/1/2013 – 2/28/2013



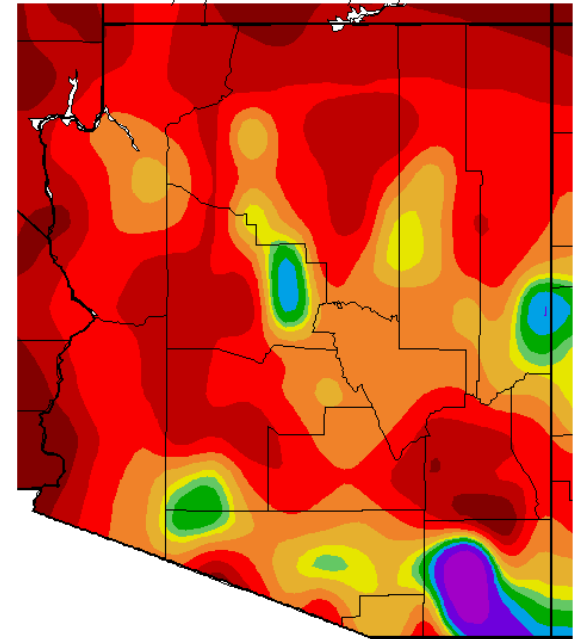
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Av. Max. Temperature dep from Ave (deg F)
2/1/2013 – 2/28/2013



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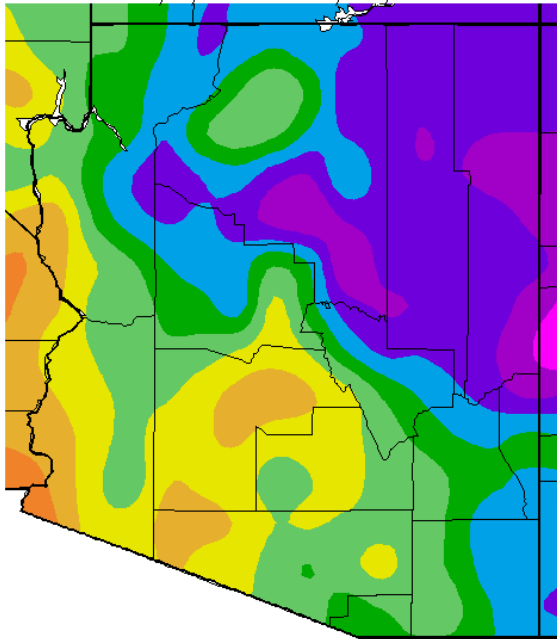
Percent of Average Precipitation (%)
2/1/2013 – 2/28/2013



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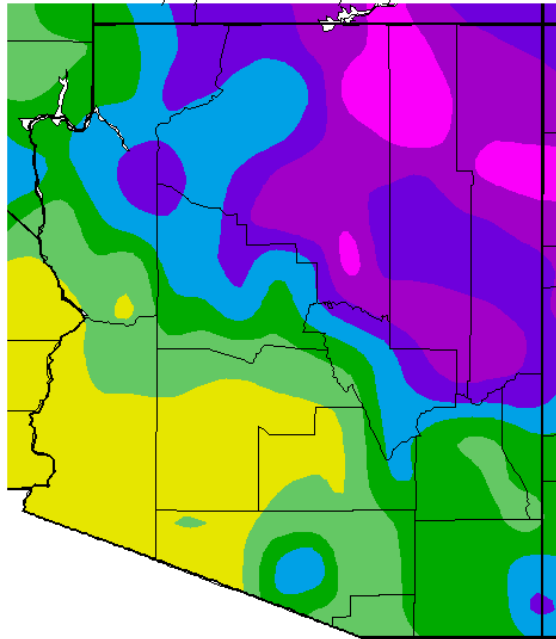
Just like January, February minimum temperatures were well below normal statewide. Daytime temperatures were also 2 to 8 degrees colder than normal, especially on the Colorado Plateau. Precipitation was generally much less than normal with a few wet spots.

Av. Min. Temperature (deg. F)
1/1/2013 – 2/28/2013



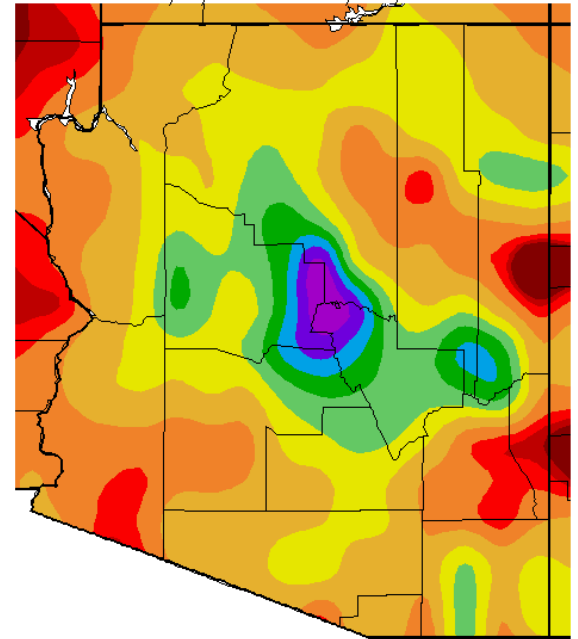
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Av. Max. Temperature (deg. F)
1/1/2013 – 2/28/2013



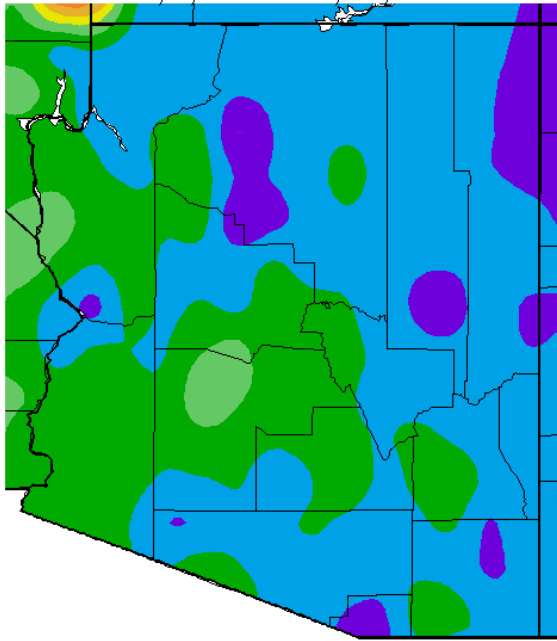
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Total Precipitation (in.)
1/1/2013 – 2/28/2013



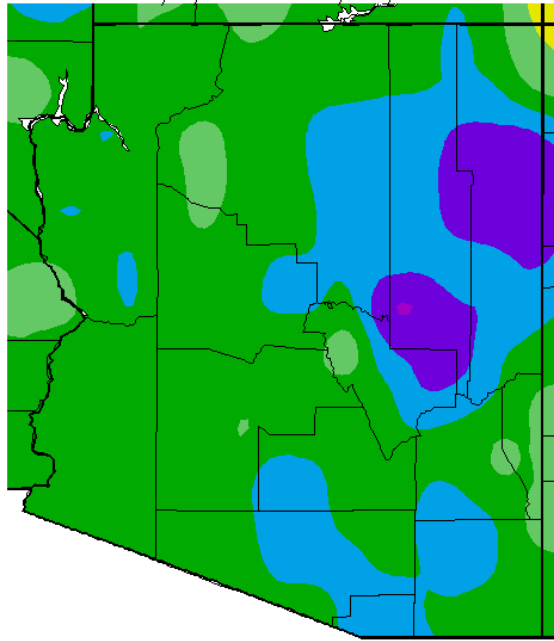
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Av. Min. Temperature dep from Ave (deg. F)
1/1/2013 – 2/28/2013



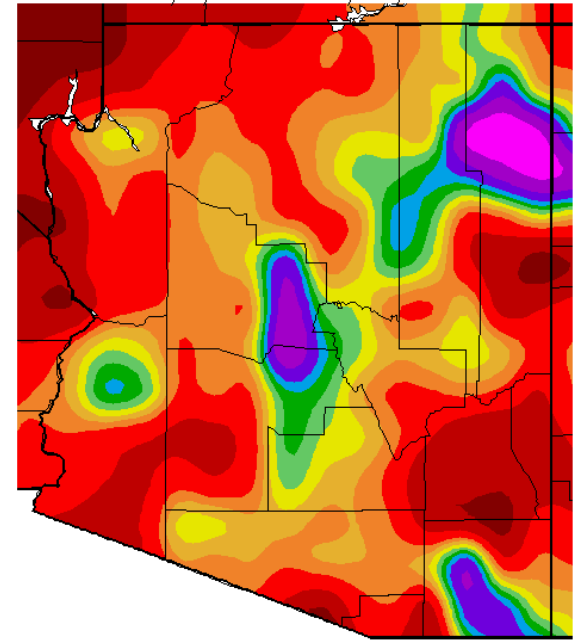
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Av. Max. Temperature dep from Ave (deg F)
1/1/2013 – 2/28/2013



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Percent of Average Precipitation (%)
1/1/2013 – 2/28/2013

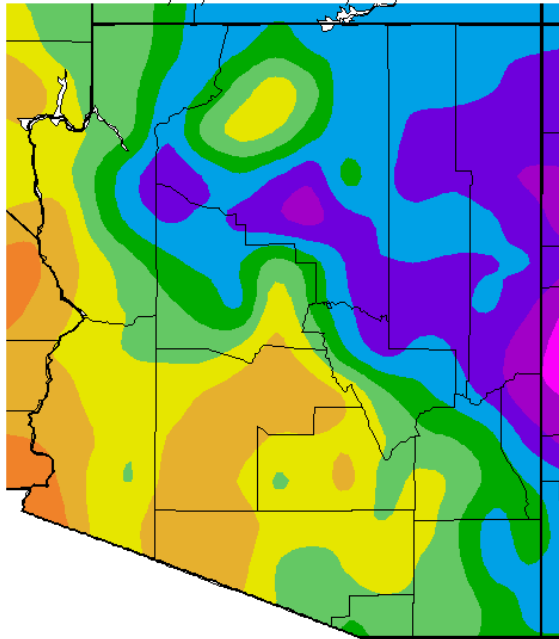


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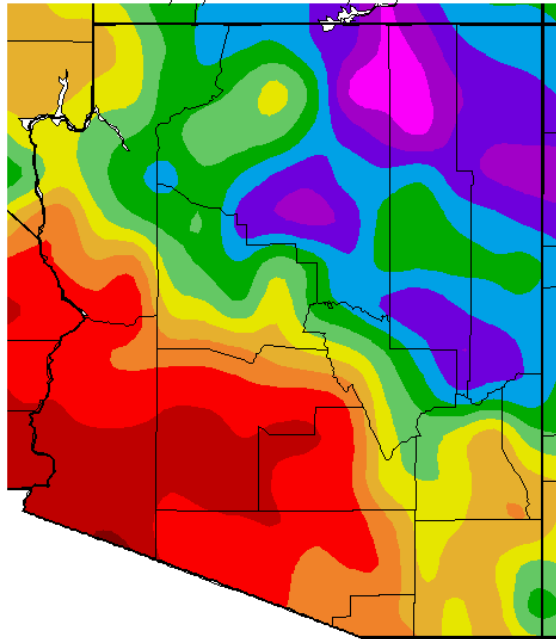
Calendar Year 2013

The calendar year has also started out with much colder than normal temperatures both daytime and nighttime statewide. Precipitation is well below average everywhere except eastern Yavapai and Maricopa counties, north central Apache and Navajo counties, and Cochise County..

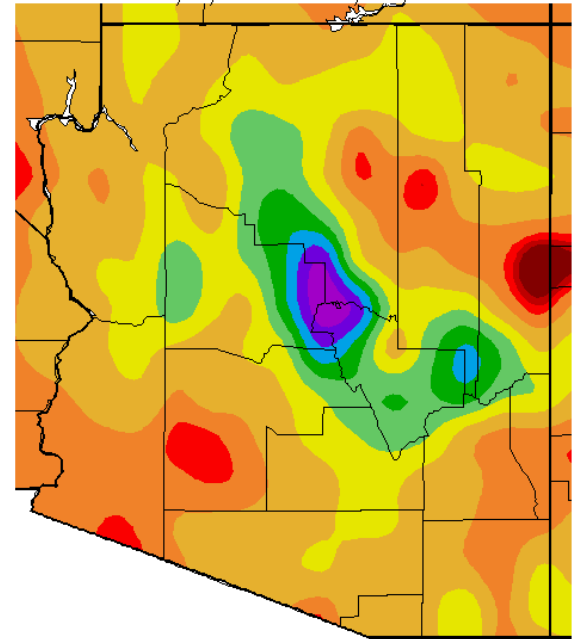
Av. Min. Temperature (deg. F)
10/1/2012 - 2/28/2013



Av. Max. Temperature (deg. F)
10/1/2012 - 2/28/2013



Total Precipitation (in.)
10/1/2012 - 2/28/2013

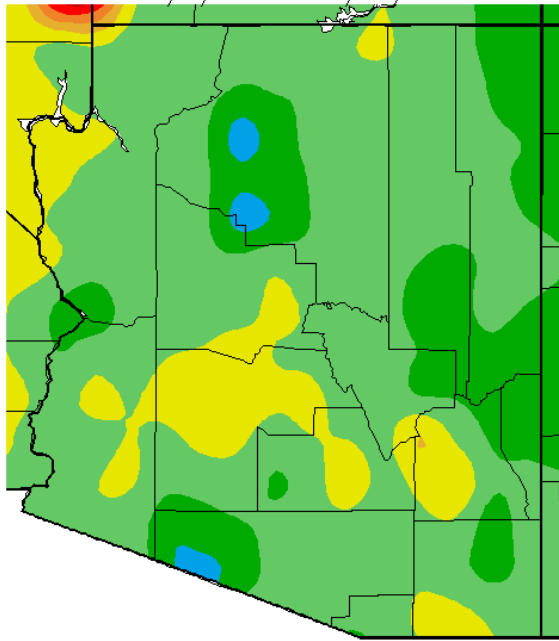


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NOAA Regional Climate Centers

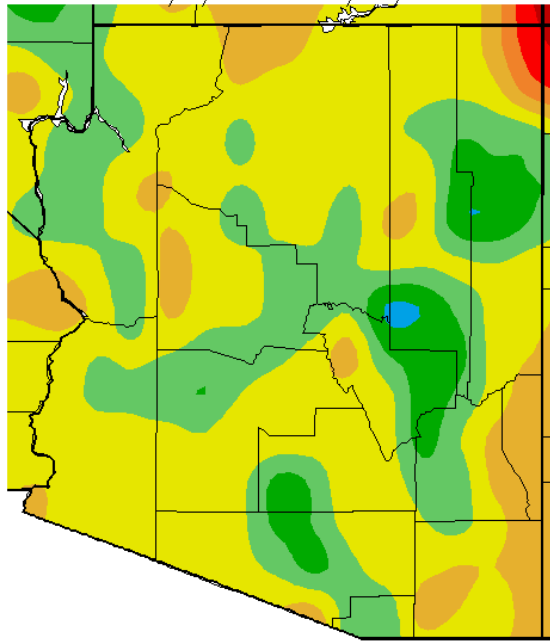
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Av. Min. Temperature dep from Ave (deg. F)
10/1/2012 - 2/28/2013



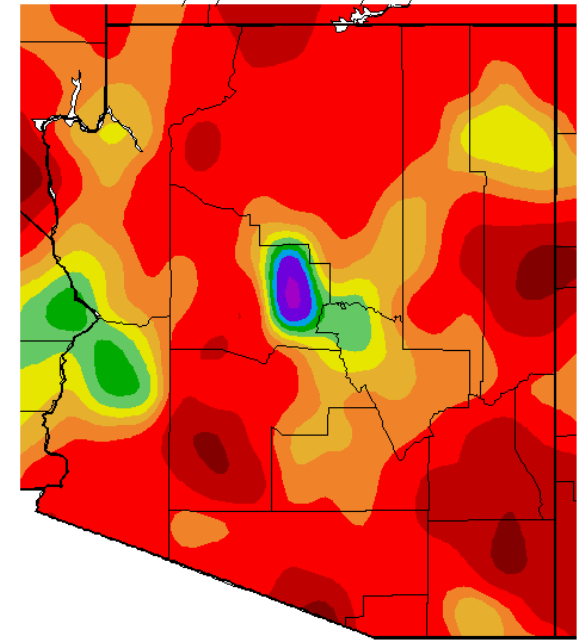
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Av. Max. Temperature dep from Ave (deg F)
10/1/2012 - 2/28/2013



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Percent of Average Precipitation (%)
10/1/2012 - 2/28/2013

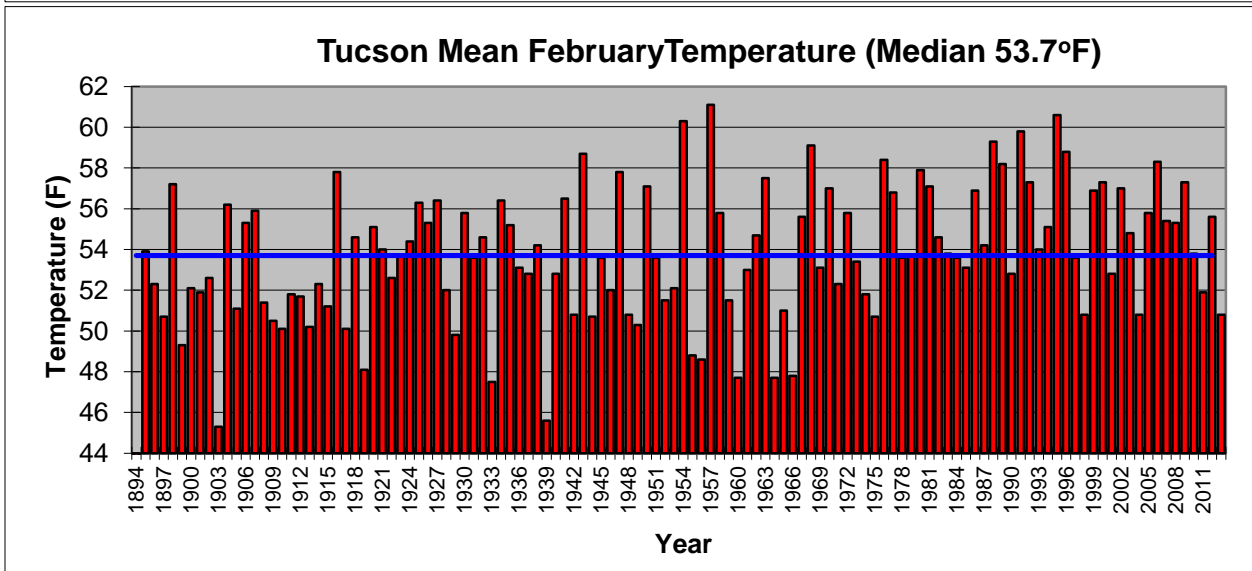
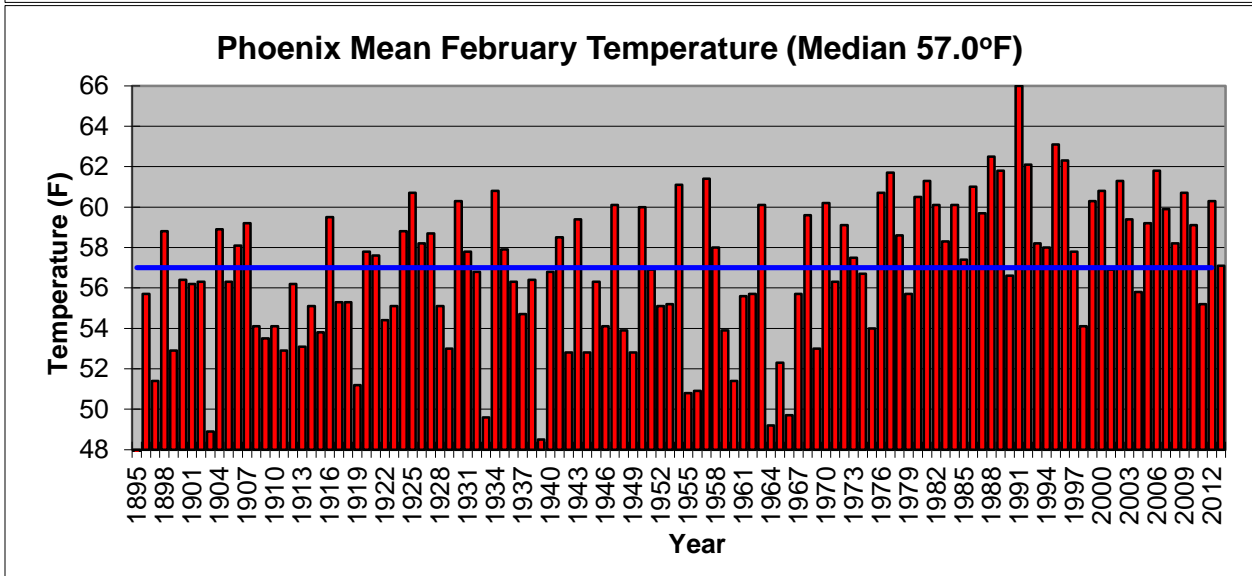
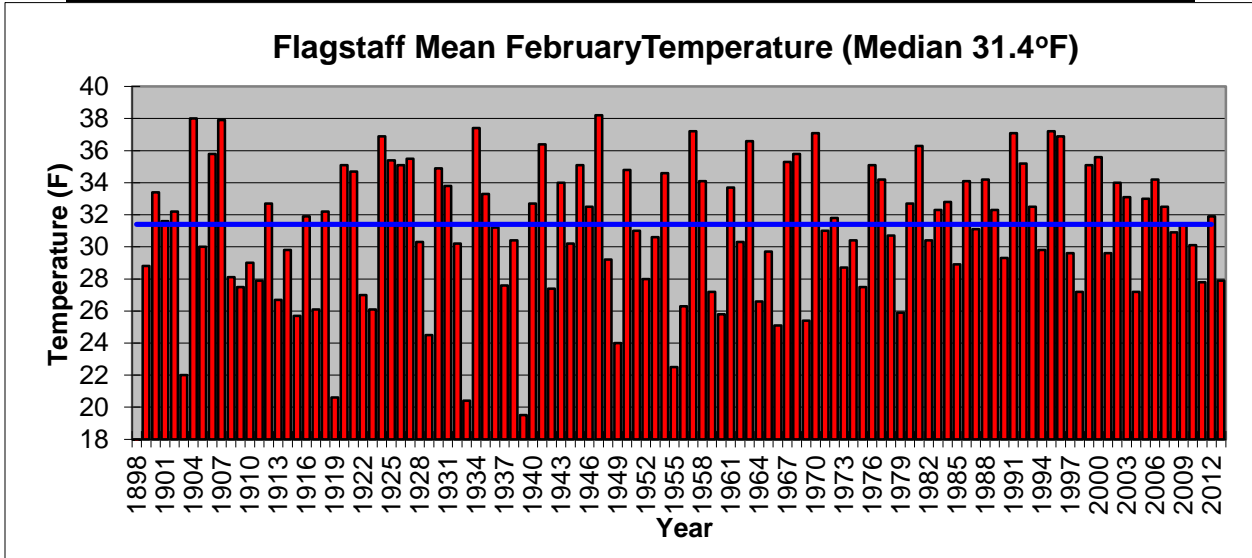


Generated 3/01/2013 at WRCC using provisional data.
NOAA Regional Climate Centers

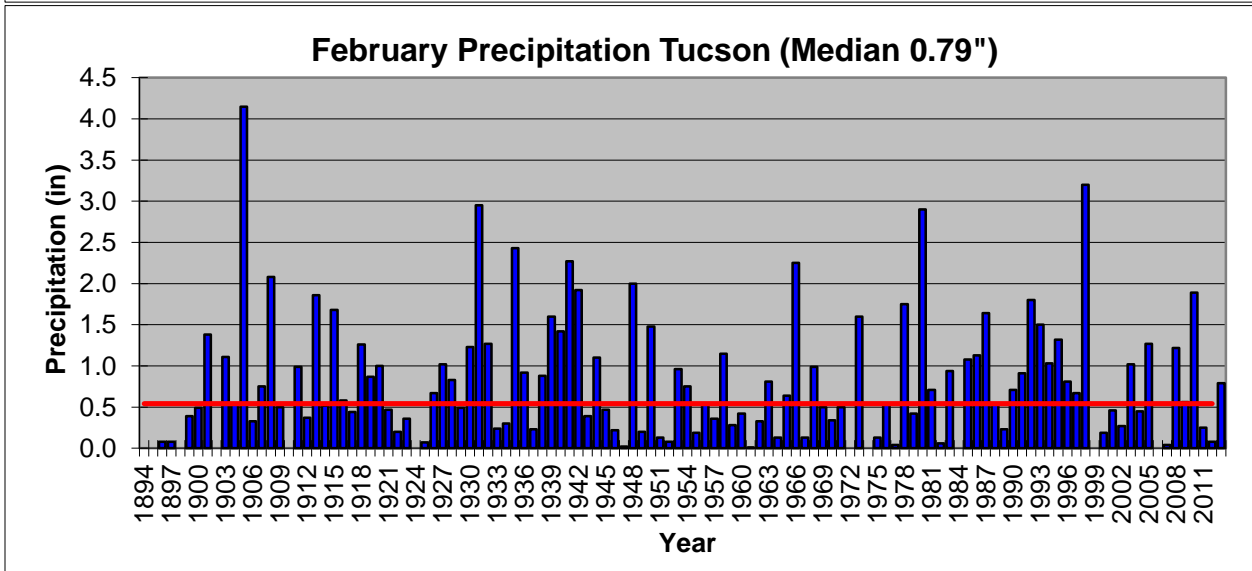
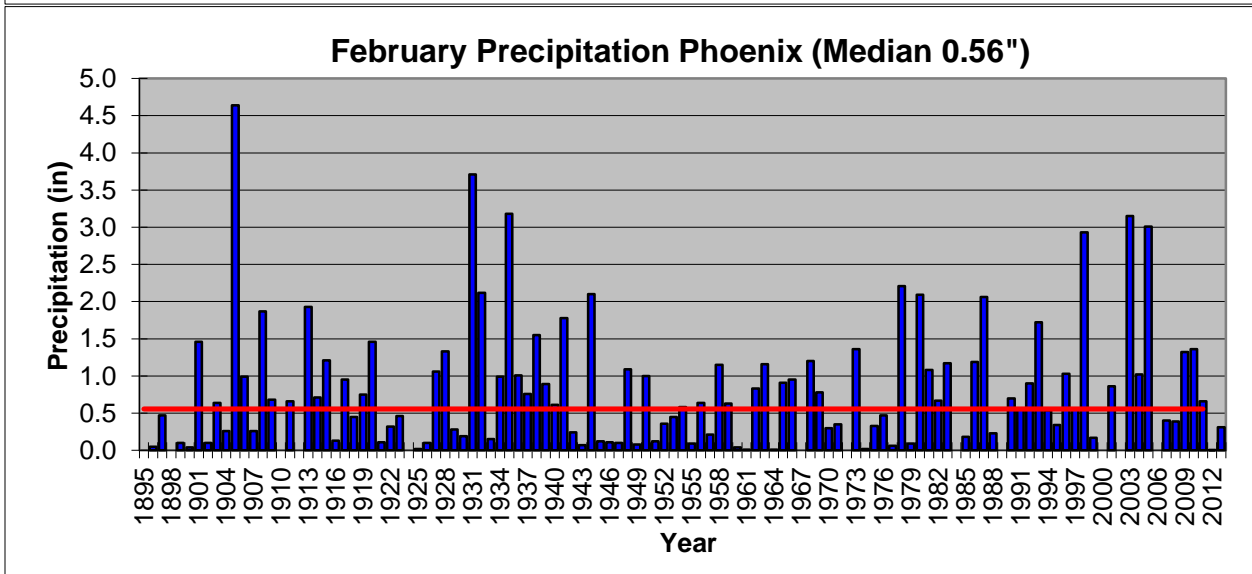
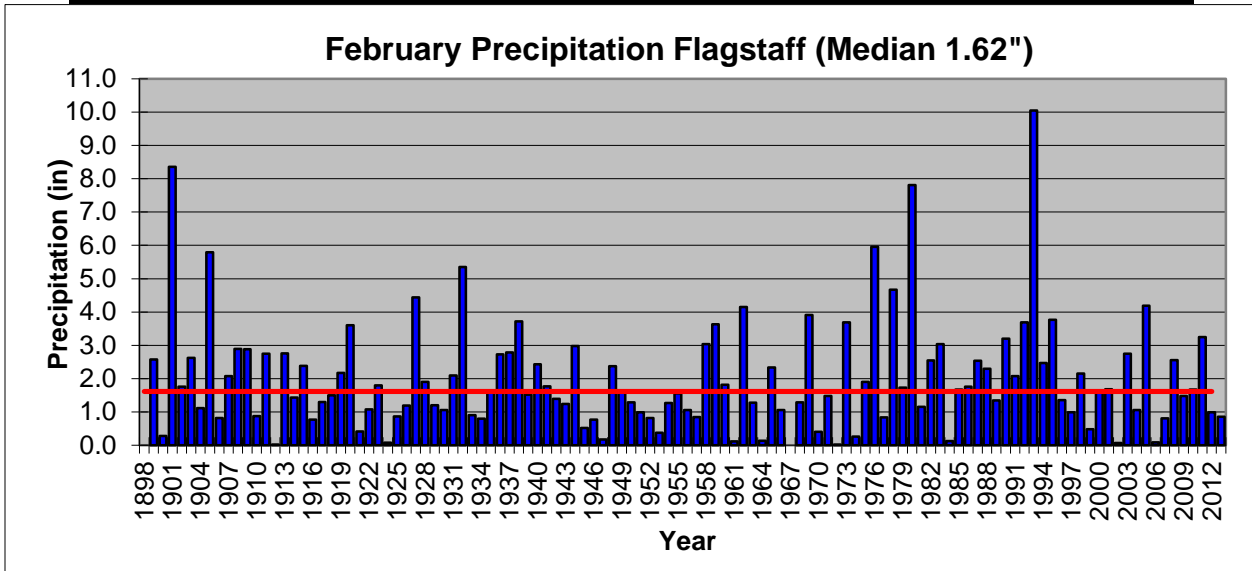
2013 Water Year

Minimum temperatures have been 2-4 degrees cooler than normal since October 1st, with January and February providing the coldest temperatures. Maximum temperatures are generally within 1 degree of average. Through the end of February, the water year remains much drier than normal, less than 70% of average across most of the southern part of the state. The only wet areas are still the lower Colorado River valley in Mohave and La Paz counties and across parts of the central Mogollon Rim.

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

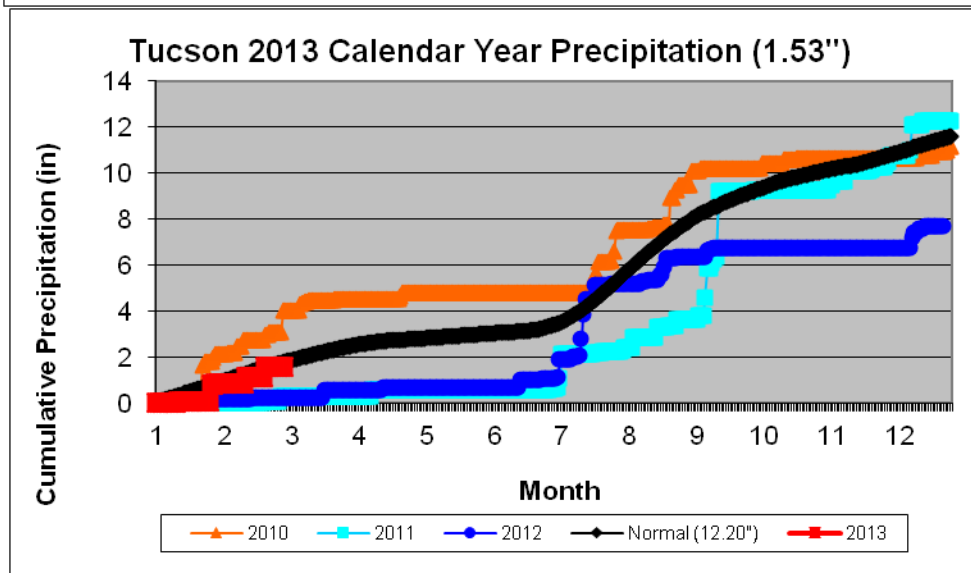
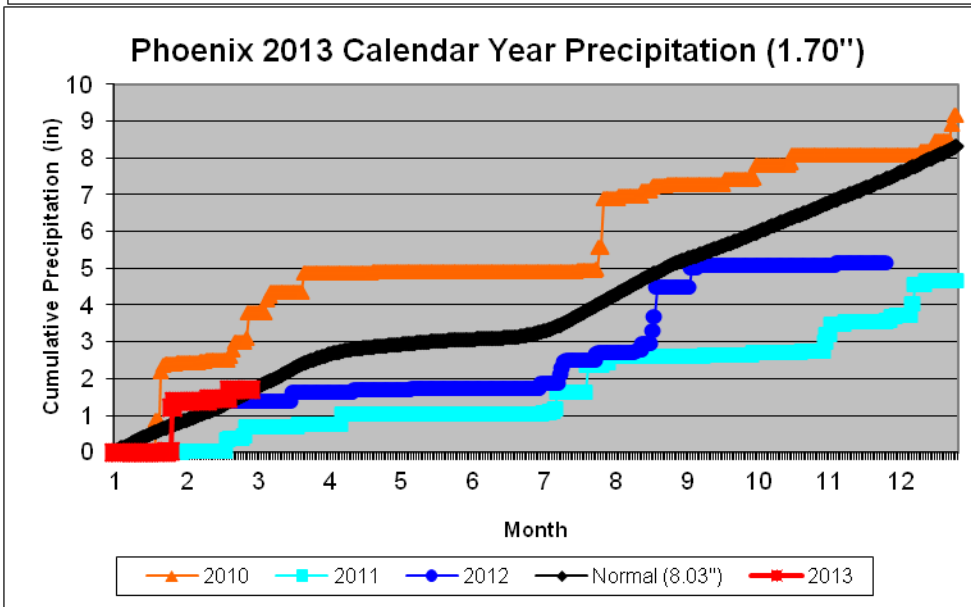
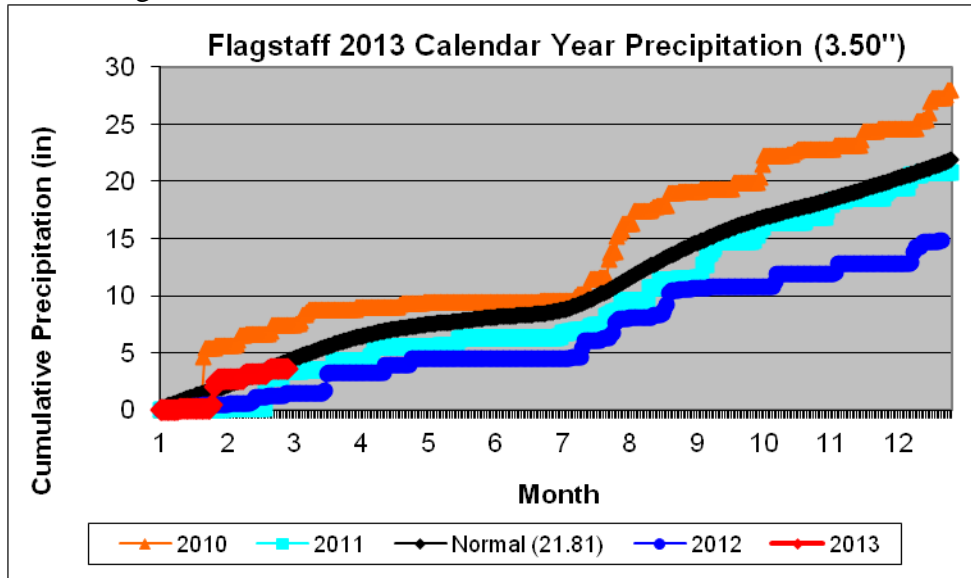


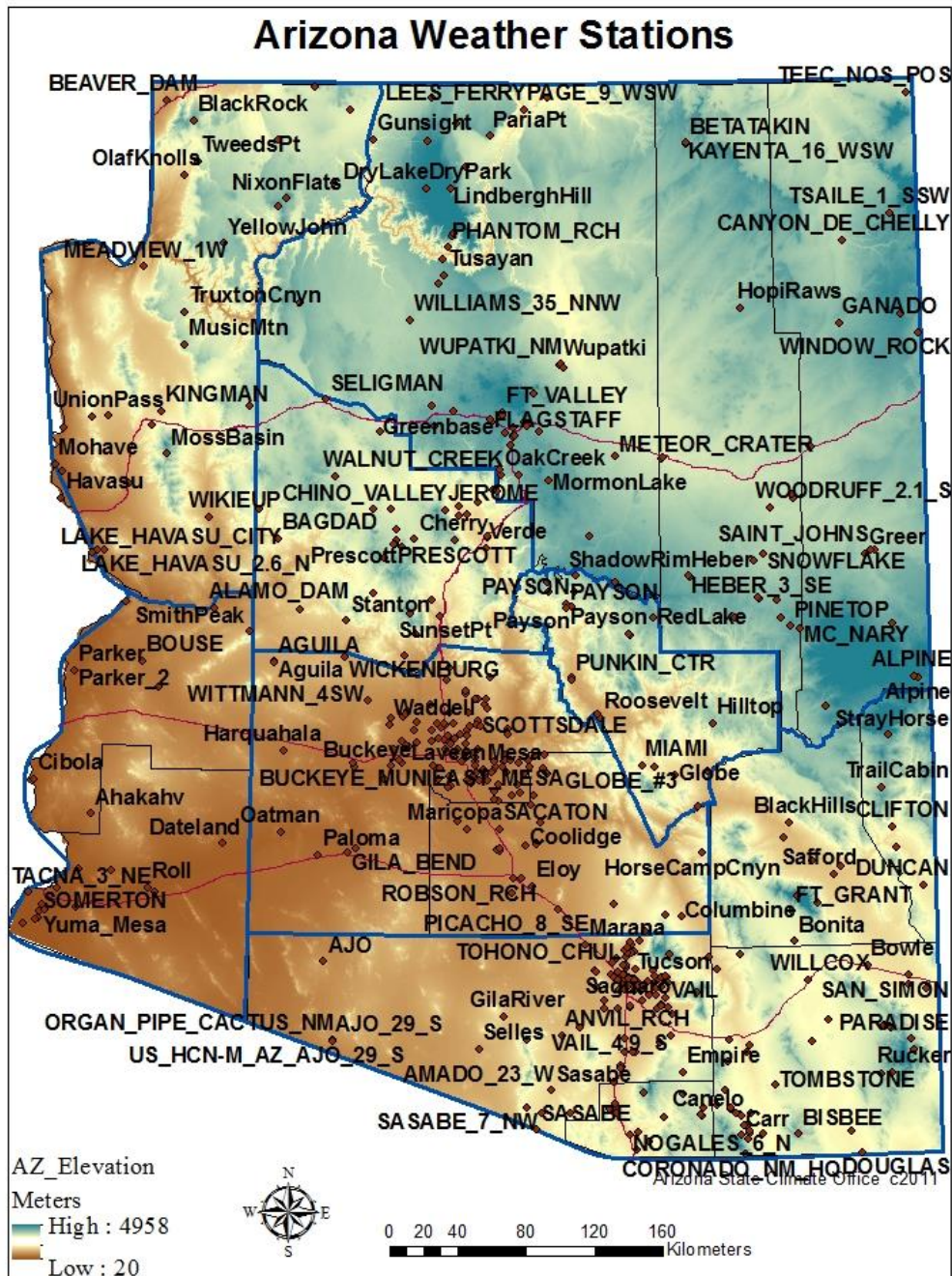
February Mean Precipitation Graphs – Flagstaff, Phoenix, and Tucson 1895-2013:



2013 Cumulative Precipitation Graphs – Flagstaff, Phoenix and Tucson:

Precipitation is well below average statewide.





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)