



Arizona Climate Summary

April 2013

Summary of conditions for March 2013

March 2013 Temperature and Precipitation Summary

March 1st – 16th: March began as a ridge of high pressure progressed across the western U.S. The first week of the month included above average daily temperatures including 8°F above normal in Flagstaff on the 2nd, 6°F above normal in Deer Valley on the 2nd, and 6°F above normal in Winslow on the 3rd. By the 8th, a strong surface low pressure system moved into Arizona bringing much cooler temperatures and precipitation to the state. As storms moved through Phoenix, some were strong enough to produce hail up to dime size and winds over 50mph. Precipitation totals on the 8th included 0.95” in Camp Verde, 0.92” in Casa Grande, 0.69” at Phoenix Sky Harbor, and 0.59” in Sedona. Precipitation continued on the 9th with the heaviest amounts falling in Carefree (1.50”), the Grand Canyon North Rim (0.82”), Page (0.79”), and Whiteriver (0.49”). Average temperatures on the 9th were 13°F below normal in Phoenix, 10°F below normal in Tucson, and 7°F below normal in Yuma. After the storm system advanced eastward, a strong ridge of high pressure developed over the western U.S. Daily temperatures were well above normal statewide from the 13th-16th and many new record highs were set during this stretch of days. 4 new record highs were set on the 13th including 89°F at Tucson AP, 18 record highs were set or tied on the 14th including 85°F at Douglas AP and 93°F in Bouse, 22 record highs were tied or set on the 15th including 96.1°F in Gila Bend, and 82°F in Petrified Forest NP, and 9 record highs were set or tied on the 16th including 88°F in Tombstone and 78°F in Prescott.

March 17th – 31st: No precipitation occurred in Arizona from the 17th-31st as stagnant high pressure persisted over the state for many days keeping temperatures elevated above normal. A series of weak surface fronts moved across the north portions of the state from the 18th-22nd, however there was not enough vorticity or moisture in place to generate precipitation. By the 22nd, the ridge of high pressure finally weakened and daily temperatures returned to near normal in the lower desert areas and below normal at higher elevations. Daily temperatures were 4°F below normal in Flagstaff and 11°F below normal in Winslow on the 23rd-24th. The cooler temperatures lasted briefly as a ridge of high pressure returned as the dominant feature over the southwest from the 26th-31st. Overall this March was one of the warmest and driest on record in many parts of the state, especially Tucson (2nd warmest and 9th driest), and Phoenix (4th warmest).

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

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

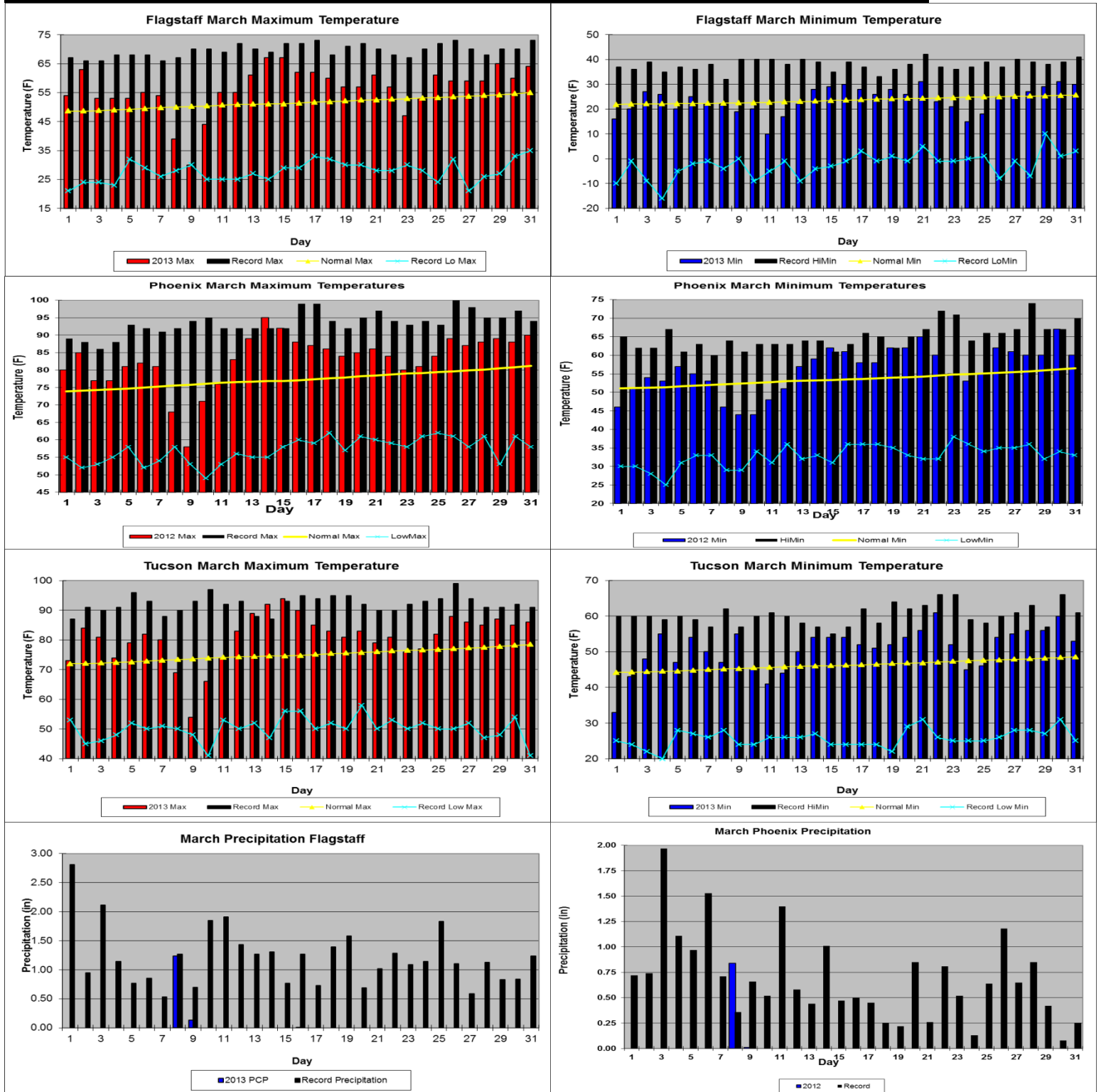
****Note:** The discrepancy between the Statewide Temperature and Precipitation values for Phoenix, Flagstaff and Tucson and the daily values in their graphs are due to the reporting times. Statewide Temperature and Precipitation values are taken at 5pm, while official daily records at the airports are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

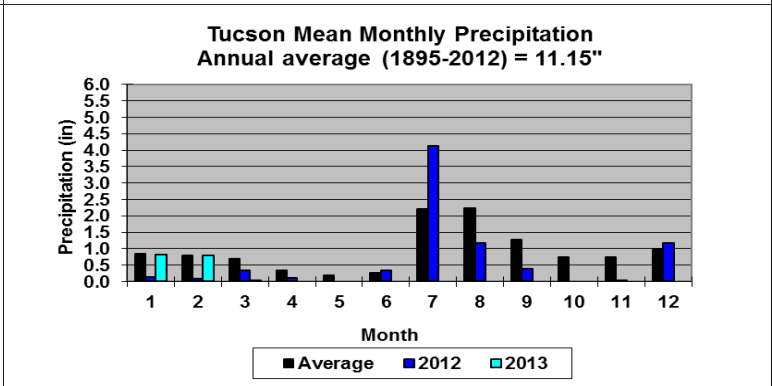
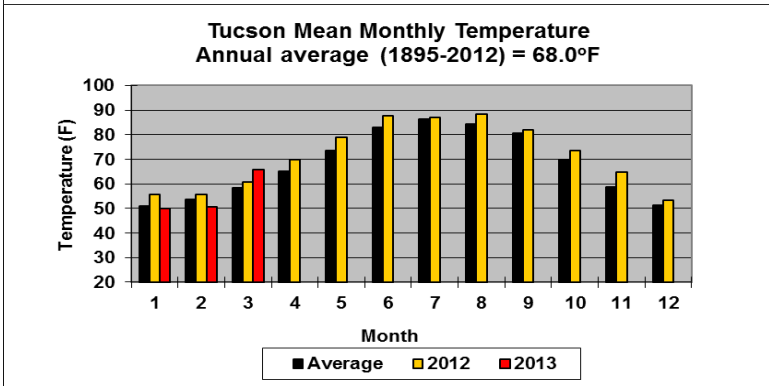
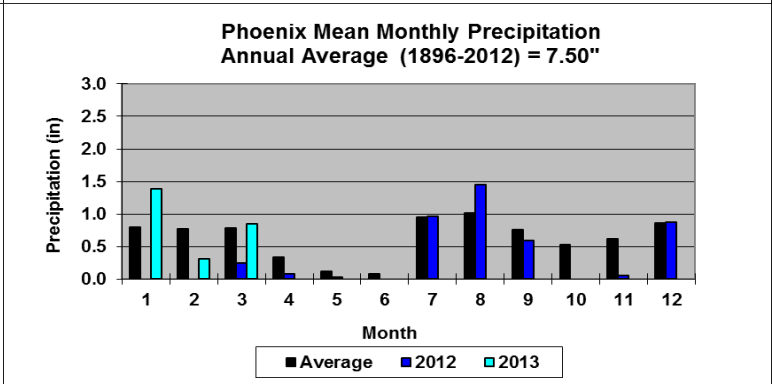
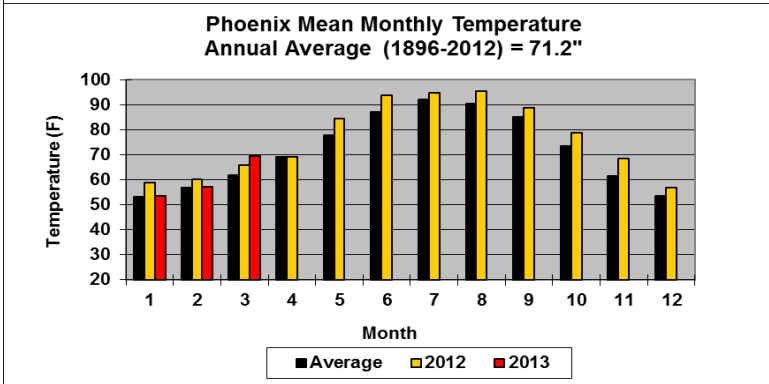
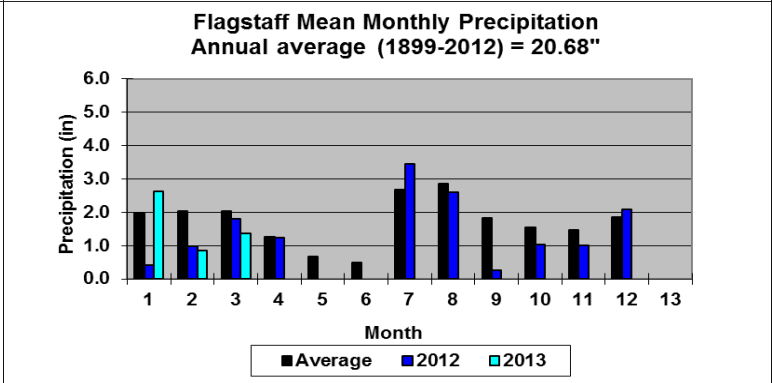
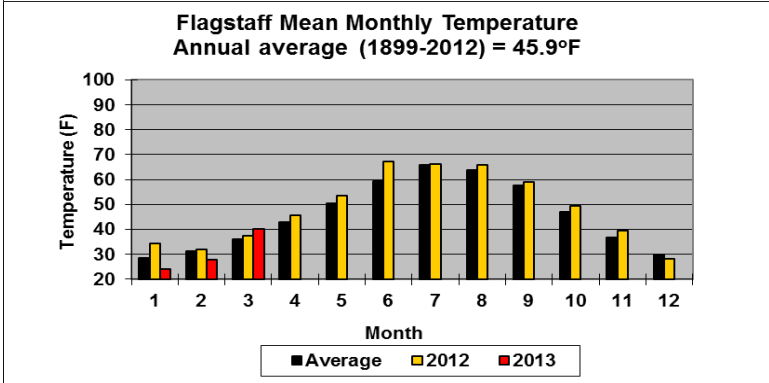
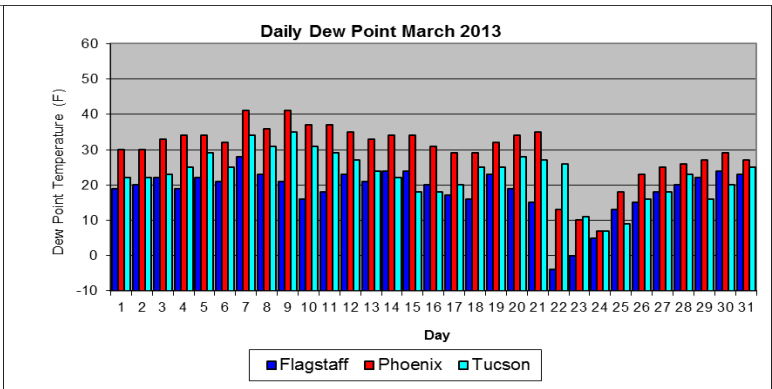
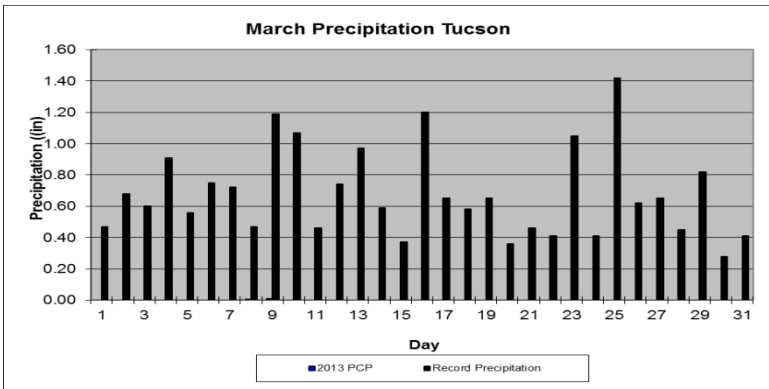
State Climate Office
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March 2013 Daily Temperature, Precipitation, & Dew Point for Flagstaff, Phoenix, and Tucson





FLAGSTAFF CLIMATE STATISTICS

March 2013

This March was tied for 16th warmest on record and had no significant ranking for precipitation.

Avg Max Temp (F)	56.3	Normal	50.4
Avg Min Temp (F)	23.7	Normal	23.6
Avg Mean Temp (F)	40.0	Normal	37.0
Departure from Normal (F)	+3.0		

Highest Monthly Avg Temp (F)	44.9	in 1934
Lowest Monthly Avg Temp (F)	26.8	in 1973

Highest Temp this month (F): 67 on 14th, 15th
 Lowest Temp this month (F): 10 on 11th

Record High (F):	73 on 03/17/2007
	03/26/1988
	03/04/1966
Record Low (F):	-16 on 03/04/1966

Temperature or precipitation records this month:
 9th LoMax 30, first set in 1969

Flagstaff Number of Days of:
 Minimum Temp 30°F or higher 4

Minimum Temp 20°F or lower	9
Maximum Temp 60°F or higher	12
Maximum Temp 40°F or lower	2

Heating Degree Days	768	Normal	868
Cooling Degree Days	0	Normal	0
Degree base 65°F			

Total March Precipitation	1.38"
Normal March Precipitation	2.12"
Departure from normal	-0.74"
Greatest 24-Hr Precipitation	1.27" on 3/8-3/9
Total Precipitation Year-to-Date	4.88"
Departure from Normal	-1.45"

Number of Days:
 Clear 26
 Partly Cloudy 3
 Cloudy 2

Greatest March Precipitation	6.75" in 1970
Least March Precipitation	0.00" in 1972

Average Wind Speed	6.4 mph
Highest Peak Gust	40 mph from 220° on 3 rd

PHOENIX CLIMATE STATISTICS

March 2013

This March was the 4th warmest on record and had no significant ranking for precipitation.

Avg Max Temp(F)	82.9	Normal	76.9
Avg Min Temp(F)	56.1	Normal	53.5
Avg Mean Temp (F)	69.5	Normal	65.2
Departure from Normal (F)	+4.3		

Highest Monthly Avg Temp (F)	72.3	in 2004
Lowest Monthly Avg Temp (F)	54.3	in 1897

Highest Temp this month (F): 95 on 14th
 Lowest Temp this month (F): 44 on 9th, 10th

Record High (F):	100 on 03/26/1988
Record Low (F):	25 on 03/04/1966

Temperature or precipitation records this month:
 8th Precip 0.84", previous record 0.43" in 1949
 14th HiMax 95 set, previous record 92 in 1934
 15th HiMax 92 tied, first set in 2007
 15th HiMin 62 set, previous record 61 in 2007
 19th HiMin 62 tied, first set in 2007
 30th HiMin 67 tied, first set in 1986

Phoenix Number of Days of:
 Minimum Temp 50°F or lower 5
 Minimum Temp 60°F or higher 12
 Maximum Temp 80°F or lower 8
 Maximum Temp 90°F or higher 3

Heating Degree Days	34	Normal	81
Cooling Degree Days	180	Normal	87
Degree base 65°F			

Total March Precipitation	0.85"
Normal March Precipitation	0.99"
Departure from normal	-0.14"
Greatest 24-Hr Precipitation	0.84" on 8 th
Total Precipitation Year-to-Date	2.55"
Departure from Normal	-0.27"

Cloudy 3

Greatest March Precipitation 4.82" in 1941
 Least March Precipitation 0.00" in 1899, 1933, 1940, 1947, 1951, 1955, 1956, 1959, 1971, 1972, 1984, 2008

Average Wind Speed 5.3 mph
 Highest Peak Gust 41 mph from 280° on 8th

Number of Days:

Clear	14
Partly Cloudy	14

TUCSON CLIMATE STATISTICS
 March 2013

This March was the 2nd warmest and tied for 9th driest on record.

Avg Max Temp(F)	80.9	Normal	74.1
Avg Min Temp(F)	50.5	Normal	46.2
Avg Mean Temp(F)	65.7	Normal	60.1
Departure from Normal (F)	+5.6		

Heating Degree Days	61	Normal	179
Cooling Degree Days	91	Normal	29
Degree base 65°F			

Highest Monthly Avg Temp (F)	66.6 in 2004
Lowest Monthly Avg Temp (F)	51.5 in 1973

Total March Precipitation	0.01"
Normal March Precipitation	0.73"
Departure from normal	-0.72"
Greatest 24-Hr Precipitation	0.01" on 03/09
Total Precipitation Year-to-Date	1.61"
Departure from Normal	-0.92"

Highest Temp this month (F): 94 on 15th
 Lowest Temp this month (F): 33 on 1st

Greatest March Precipitation	3.88" in 1905
Least March Precipitation	0.00" in 1895, 1928, 1933, 1935, 1956, 1959, 1971, 1984

Record High (F): 99 on 03/26/1988
 Record Low (F): 20 on 03/04/1965

Number of Days:

Clear	22
Partly Cloudy	2
Cloudy	7

Temperature or precipitation records this month:
 13th HiMax 89 set, previous record 88 in 1989
 14th HiMax 92 set, previous record 87 in 2007
 15th HiMax 94 set, previous record 93 in 1910

Average Wind Speed 6.7 mph
 Highest Peak Gust 47 mph from 220° on 8th

Tucson Number of Days of:

Minimum Temp 50°F or lower	13
Minimum Temp 60°F or higher	2
Maximum Temp 80°F or lower	11
Maximum Temp 90°F or higher	3

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

Winds for March:

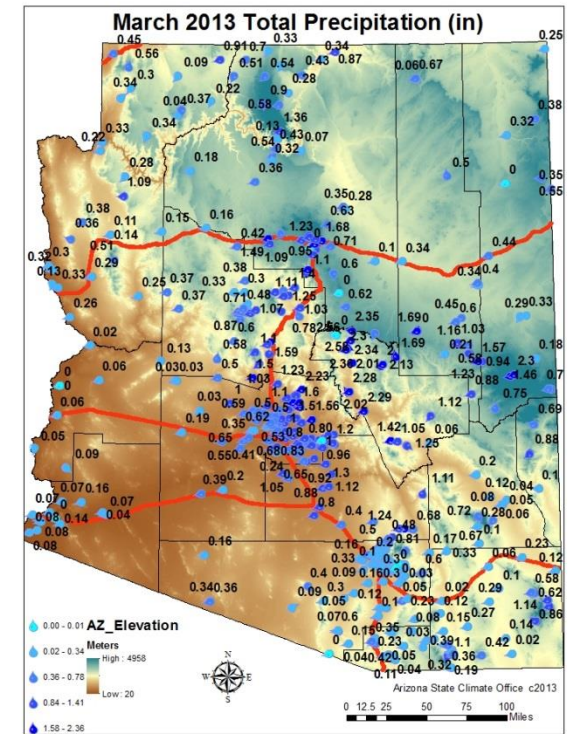
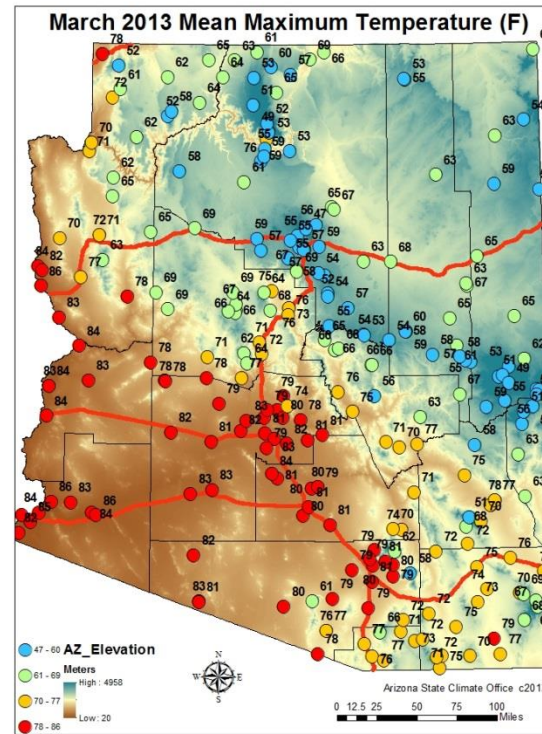
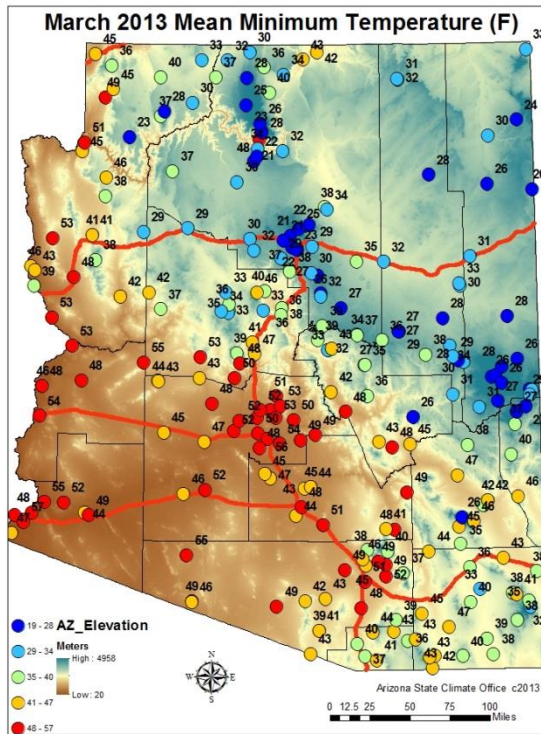
Day	Phoenix		Flagstaff		Tucson	
	Avg	Max	Avg	Max	Avg	Max
1	3.4	15	6.7	28	4.6	12
2	3.7	13	2.8	16	5.6	17
3	4.4	14	11.4	40	7.8	23
4	5.8	26	5.4	23	8.4	28
5	6.5	22	3.1	20	5.8	21
6	4.4	15	8.3	32	5.7	20
7	5.2	17	8.5	37	7.8	29
8	12.3	41	11.4	36	13.5	47
9	4.7	16	10.8	25	6.4	22
10	2.7	16	11.7	36	7.1	25
11	3	13	2.1	17	5	16
12	3.5	16	4.6	29	6	17
13	4.3	21	3.9	18	5.6	20
14	4.1	20	4	18	6.2	23
15	5.6	17	7.2	26	7.8	28
16	6.5	20	4.8	30	7.3	25
17	7.5	22	6.9	29	8.6	32
18	5.1	18	5.9	36	5.4	23
19	4.6	14	3.1	18	5.3	23
20	4.3	15	10.3	39	6.9	22
21	5.8	21	6.5	31	5	18
22	7.2	25	8.1	36	8.5	30
23	7.3	26	7	32	7.3	29
24	5.6	20	3.7	25	7	25
25	4.1	15	2.9	26	5.8	21
26	5.7	16	9.7	35	6.5	39
27	6.8	20	6.4	29	7.9	26
28	5.5	17	6.6	30	7	22
29	4.9	16	4.2	29	4.6	32
30	4.9	14	3.5	22	6	24
31	6	28	7.9	33	5.1	23

Dew Points for March:

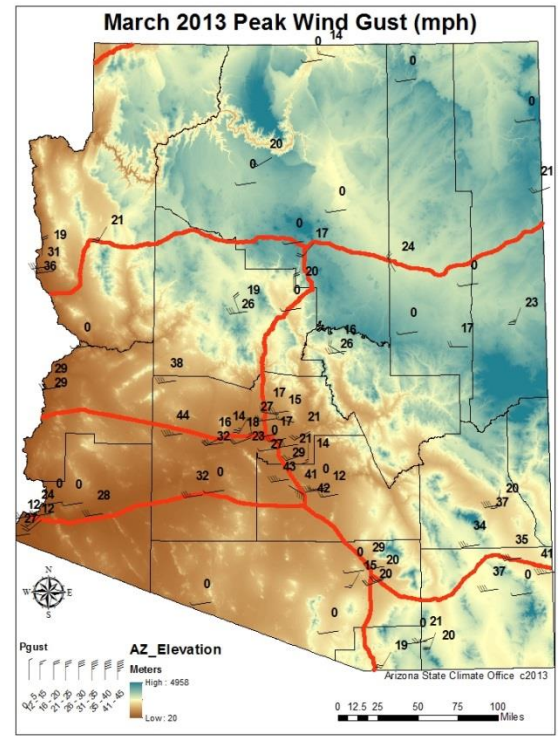
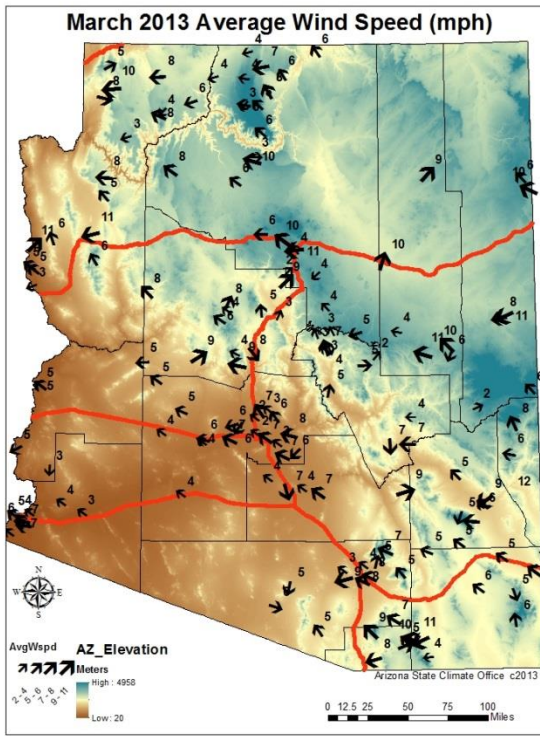
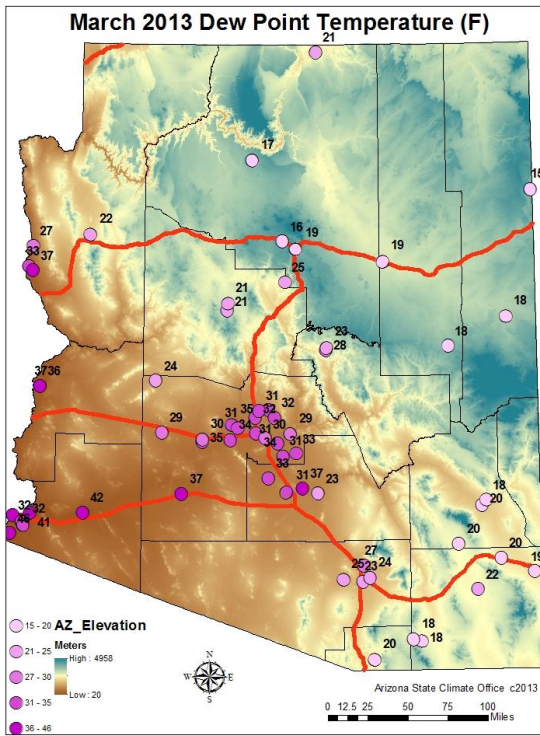
Daily Average Dew Point (°F):

Day	Phx	Tuc	Flg
1	30	22	19
2	30	22	20
3	33	23	22
4	34	25	19
5	34	29	22
6	32	25	21
7	41	34	28
8	36	31	23
9	41	35	21
10	37	31	16
11	37	29	18
12	35	27	23
13	33	24	21
14	34	22	24
15	34	18	24
16	31	18	20
17	29	20	17
18	29	25	16
19	32	25	23
20	34	28	19
21	35	27	15
22	13	26	-4
23	10	11	0
24	7	7	5
25	18	9	13
26	23	16	15
27	25	18	18
28	26	23	20
29	27	16	22
30	29	20	24
31	27	25	23

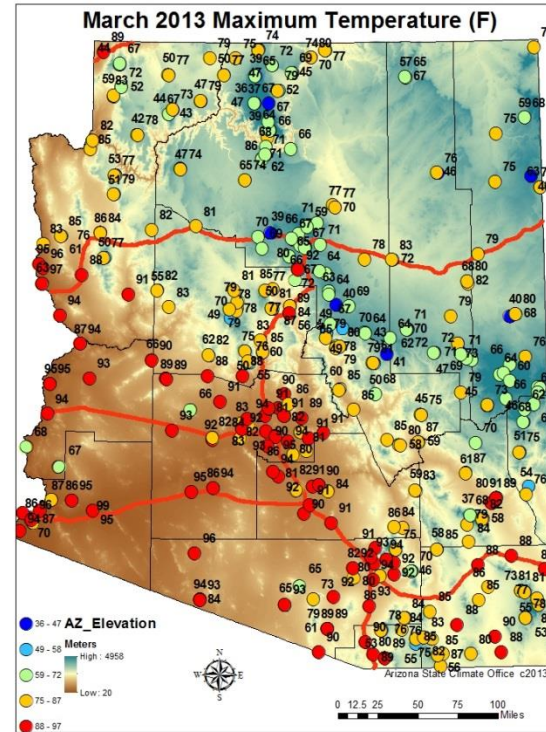
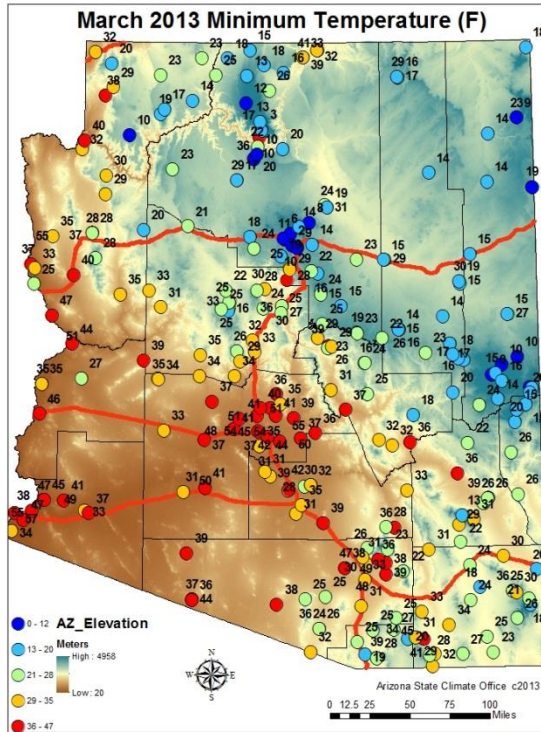
March 2013 Temperature, Dew Point, Wind Speed, and Precipitation Maps are based on **preliminary data** from the National Weather Service, the Arizona Meteorological Network (AZMet), operated by the University of Arizona College of Agriculture Cooperative Extension and the RAWS (Remote Automated Weather 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 19°F at Sunrise Mountain to 57°F at Yuma. Average daytime temperatures ranged from 86°F at Tacna to 48°F at Sunrise Mountain. Precipitation values ranged from less than an inch at many locations in the southwest to 2.36" at Natural Bridge.

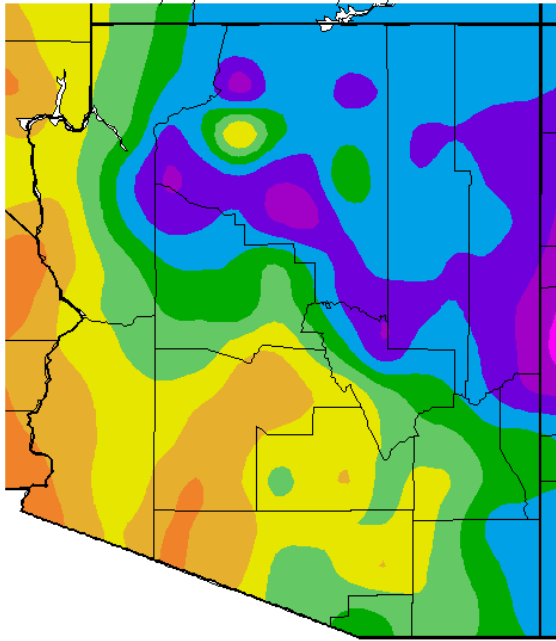


Average monthly dew points ranged from 15°F at Window Rock, to 46°F at Yuma. As in most months, average winds were light, with 12 mph as the highest average at Guthrie. The highest peak wind gust was 44 mph at Harquahala, west of Phoenix. Peak wind gusts blew in all different directions, which is typical 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.

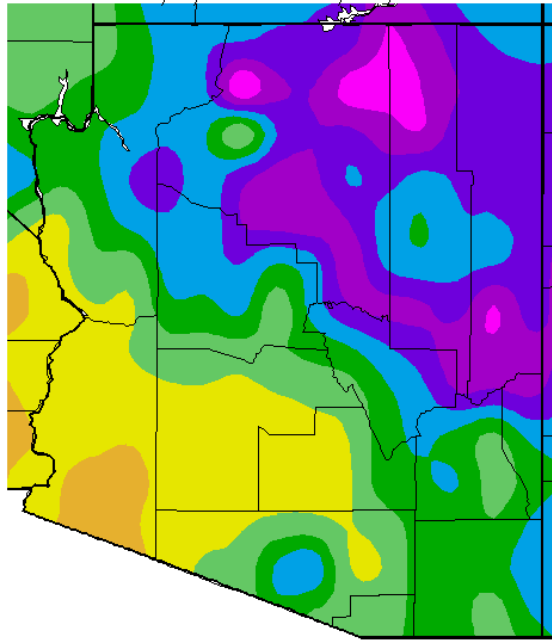


Lowest temperature in March was 0°F recorded at Sunrise Mountain. The highest daytime temperature of the month was 97°F recorded at Yuma.

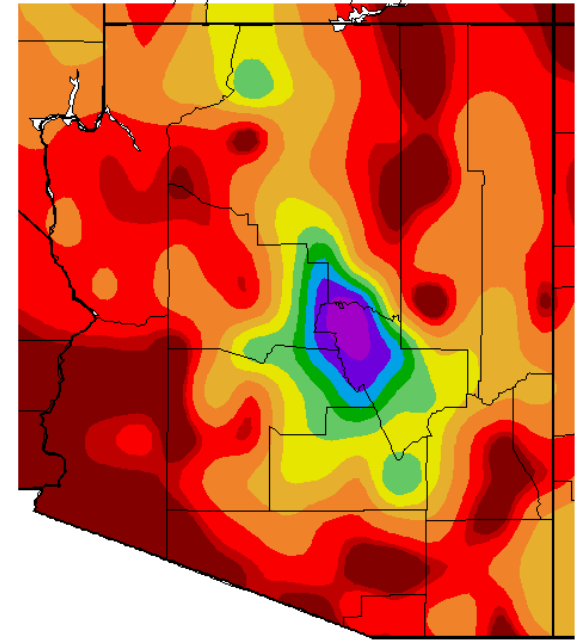
Av. Min. Temperature (deg. F)
3/1/2013 – 3/31/2013



Av. Max. Temperature (deg. F)
3/1/2013 – 3/31/2013



Total Precipitation (in.)
3/1/2013 – 3/31/2013

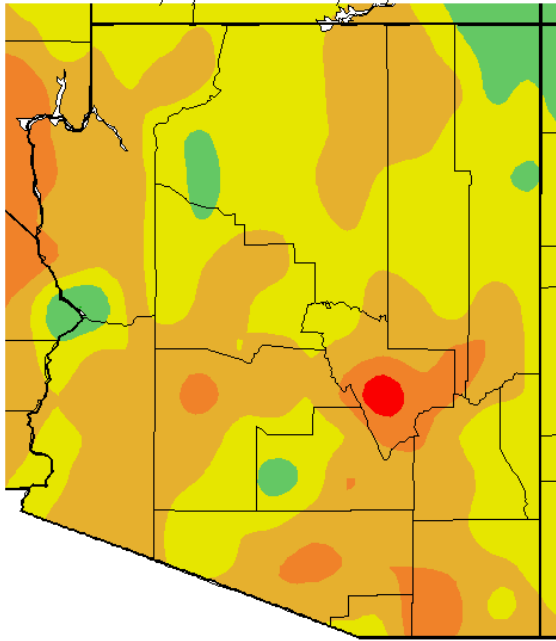


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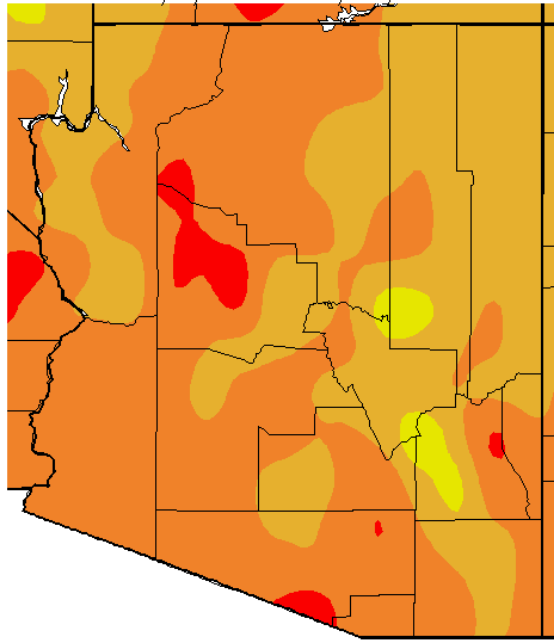
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Av. Min. Temperature dep from Ave (deg. F)
3/1/2013 – 3/31/2013



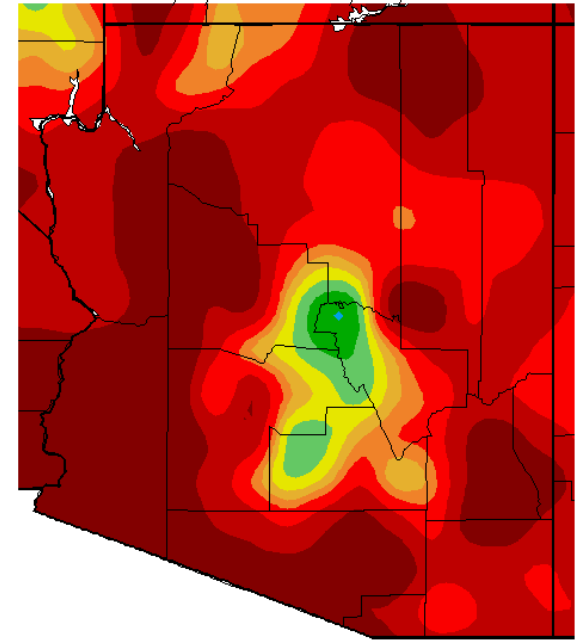
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Av. Max. Temperature dep from Ave (deg F)
3/1/2013 – 3/31/2013



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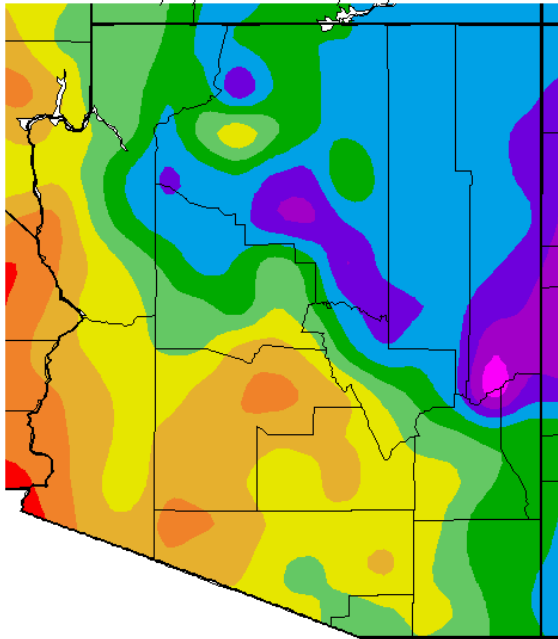
Percent of Average Precipitation (%)
3/1/2013 – 3/31/2013



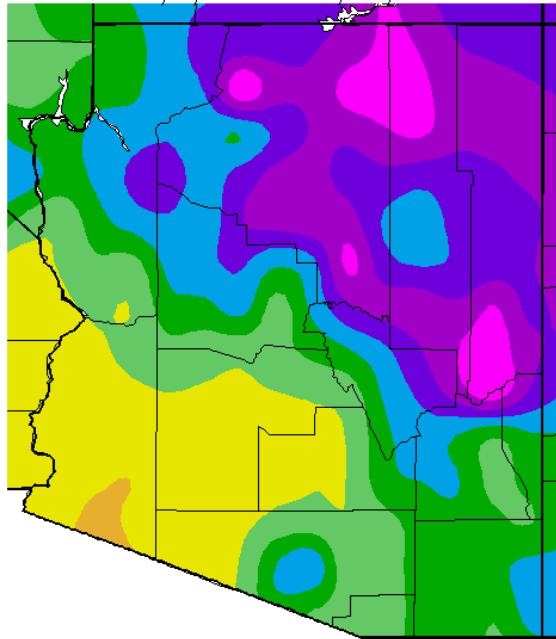
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March minimum temperatures were above normal everywhere except the northeast corner and along the lower Colorado River. Daytime temperatures were 4 to 8 degrees warmer than normal, in contrast to the extreme cold temperatures in January. Precipitation was near average only in eastern Maricopa, northwestern Gila, western Yavapai and western Pinal counties. Most of the rest of the state received less than 50% of normal precipitation.

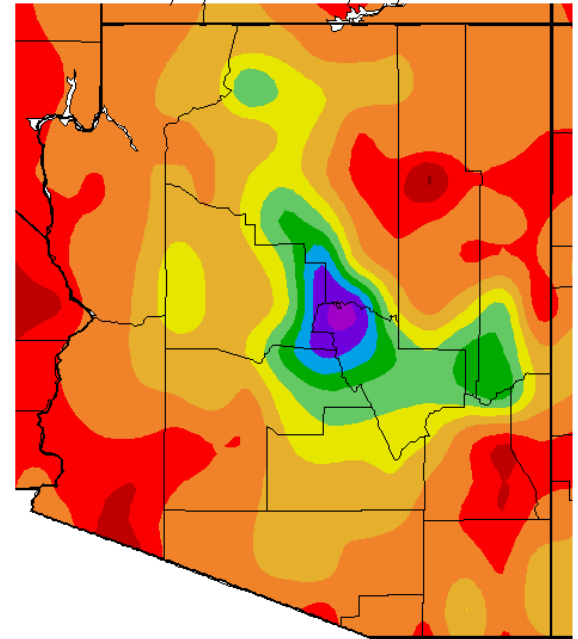
Av. Min. Temperature (deg. F)
1/1/2013 – 3/31/2013



Av. Max. Temperature (deg. F)
1/1/2013 – 3/31/2013



Total Precipitation (in.)
1/1/2013 – 3/31/2013

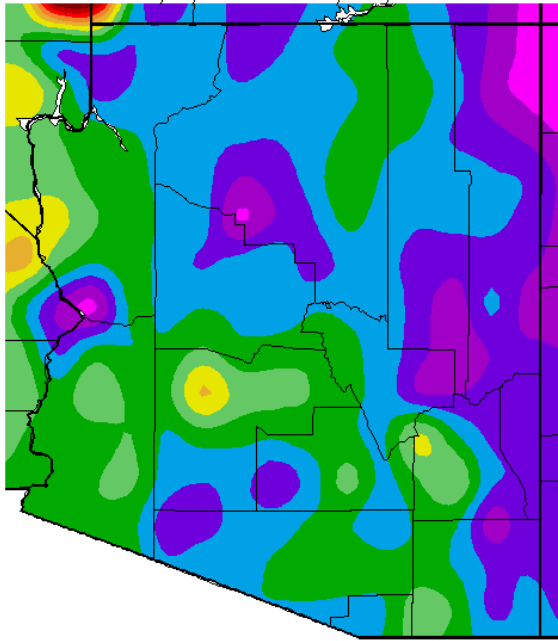


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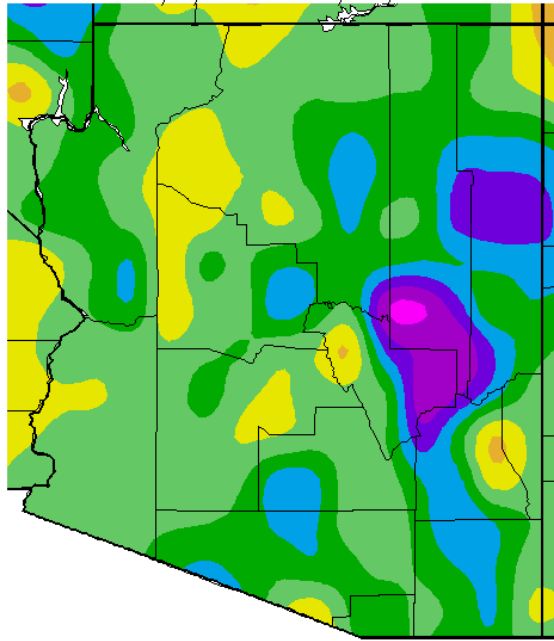
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Av. Min. Temperature dep from Ave (deg. F)
1/1/2013 – 3/31/2013



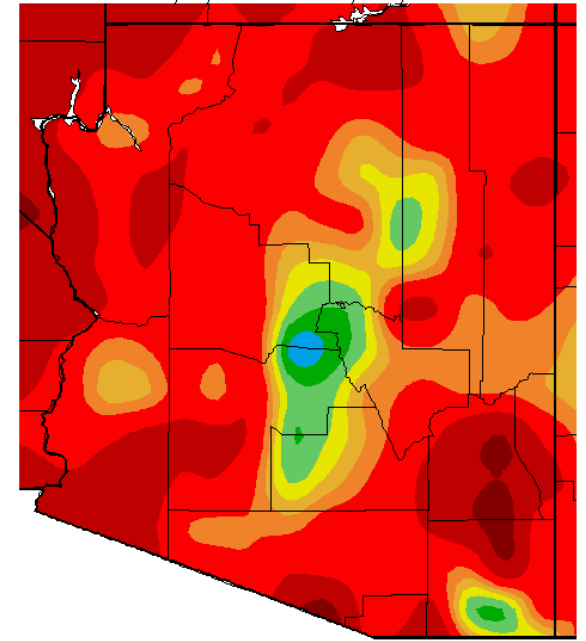
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Av. Max. Temperature dep from Ave (deg F)
1/1/2013 – 3/31/2013



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Percent of Average Precipitation (%)
1/1/2013 – 3/31/2013

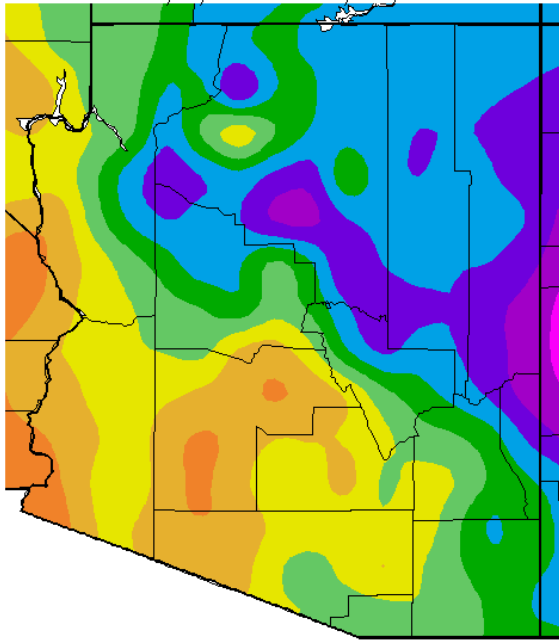


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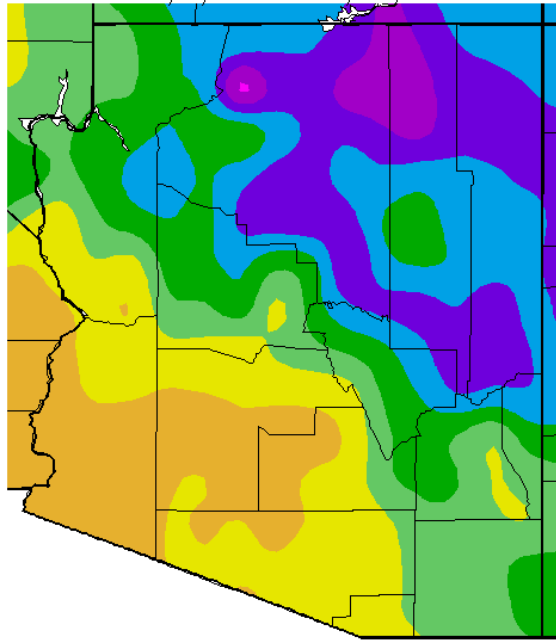
Calendar Year 2013

Average nighttime temperatures have been 1 to 5°F colder than normal, while daytime temperatures have only been 1 to 3 degrees colder than normal. Precipitation is near average in eastern Maricopa and Yavapai counties, and western Gila and Pinal counties. Elsewhere rain and snow have been scarce, less than 70% of normal.

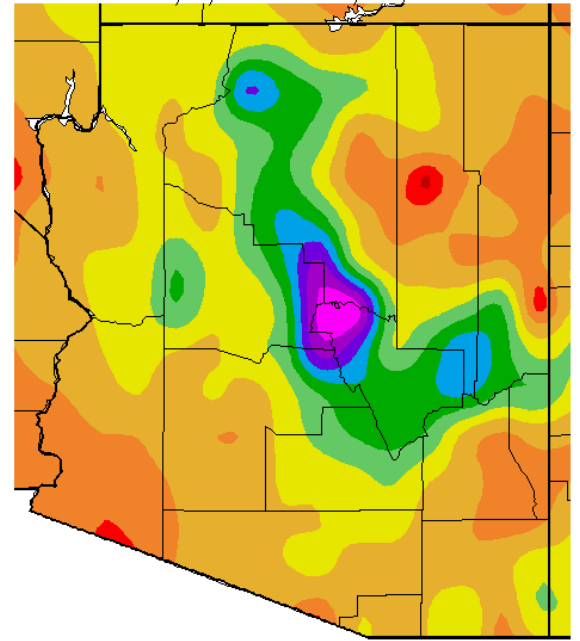
Av. Min. Temperature (deg. F)
10/1/2012 - 3/31/2013



Av. Max. Temperature (deg. F)
10/1/2012 - 3/31/2013



Total Precipitation (in.)
10/1/2012 - 3/31/2013

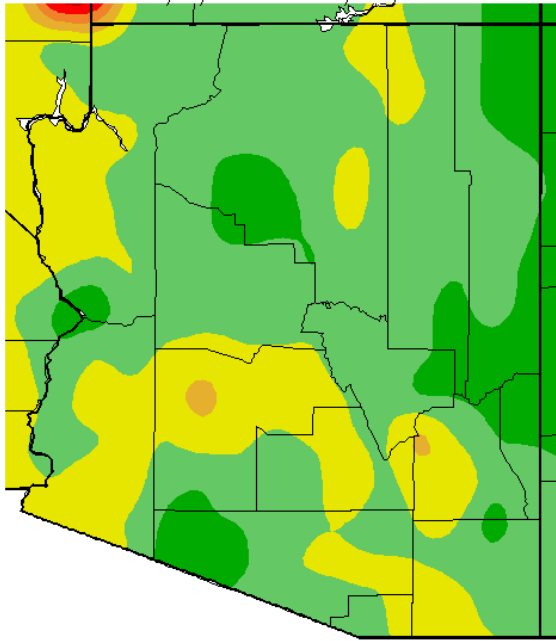


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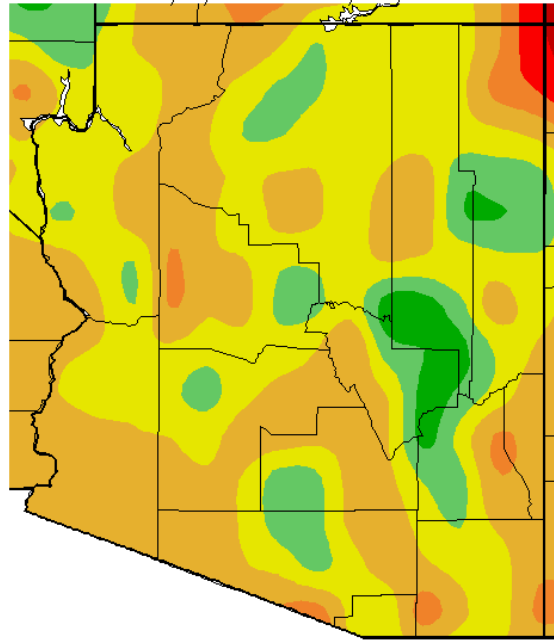
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Av. Min. Temperature dep from Ave (deg. F)
10/1/2012 - 3/31/2013



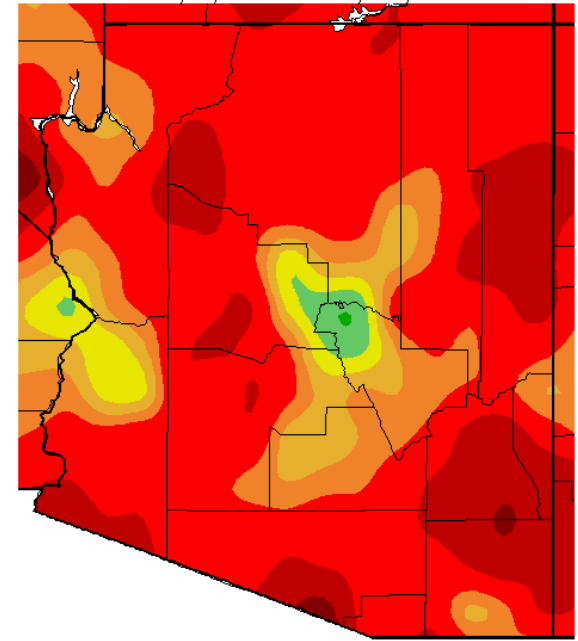
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Av. Max. Temperature dep from Ave (deg F)
10/1/2012 - 3/31/2013



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Percent of Average Precipitation (%)
10/1/2012 - 3/31/2013

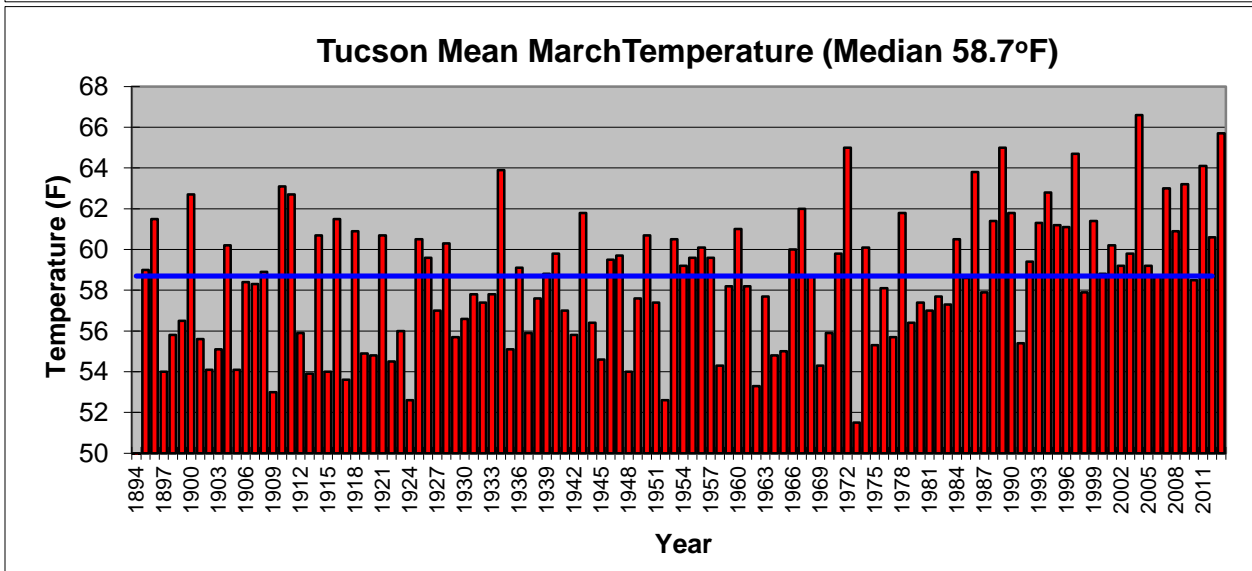
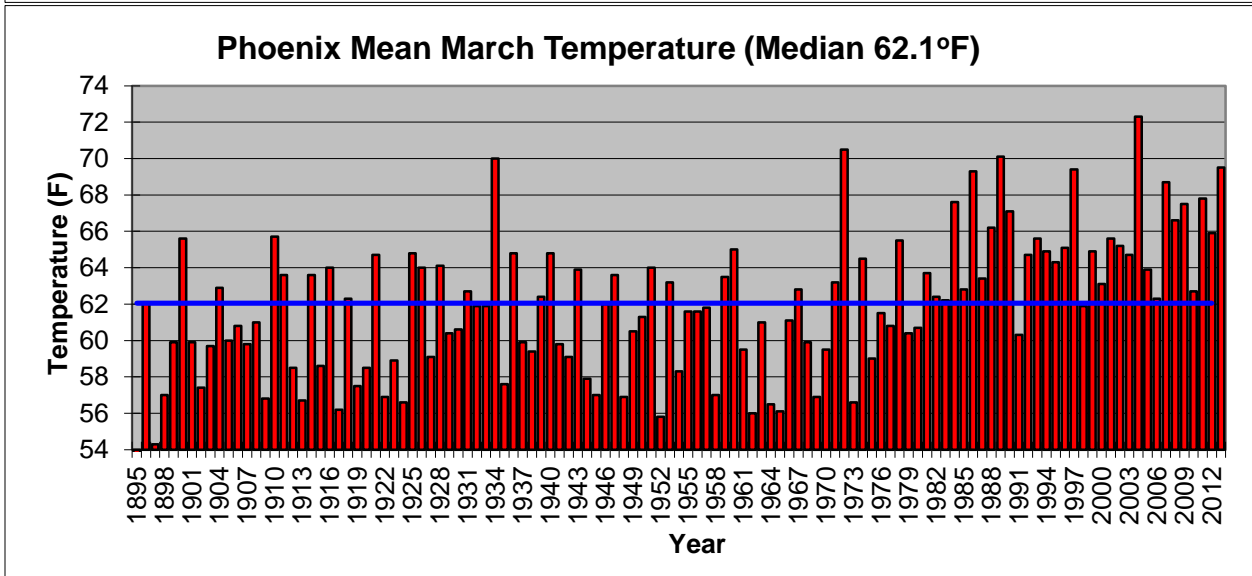
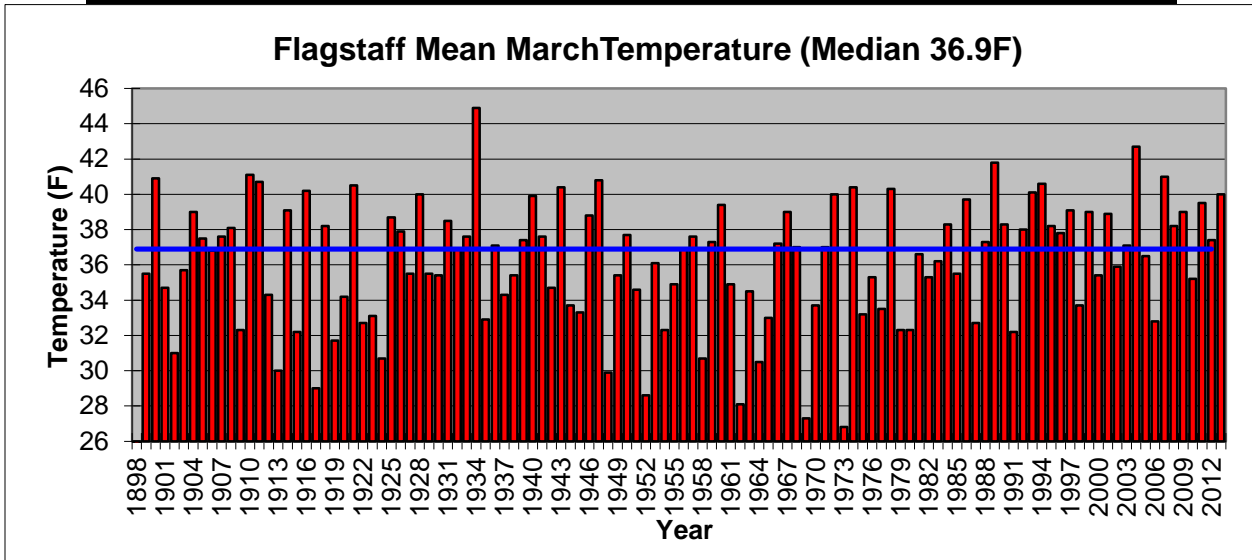


Generated 4/01/2013 at WRCC using provisional data.
NOAA Regional Climate Centers

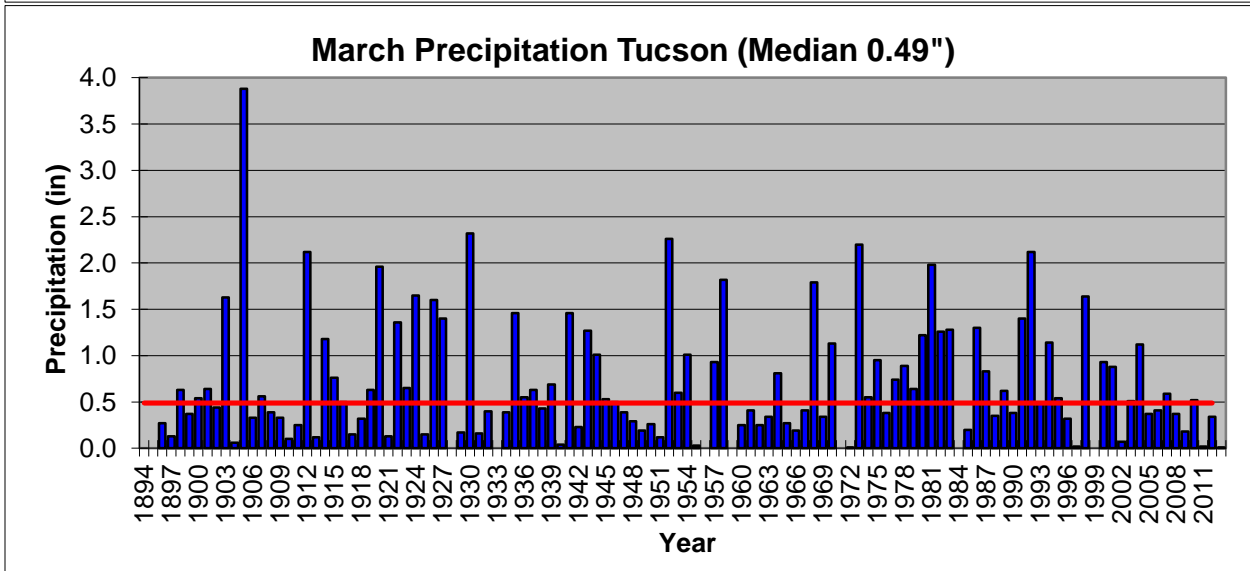
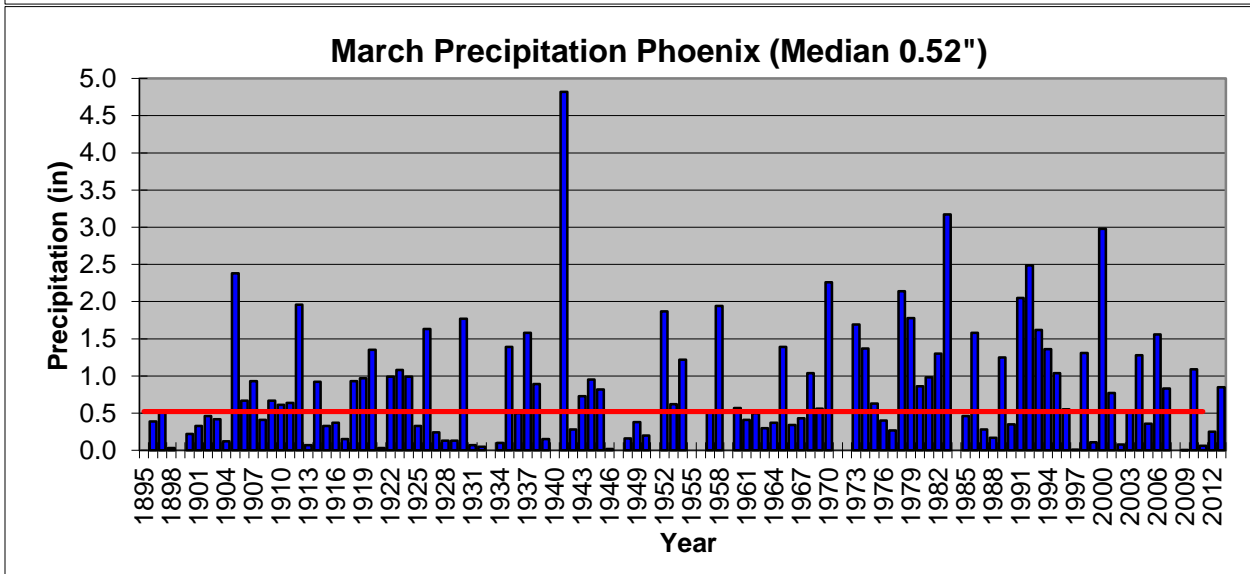
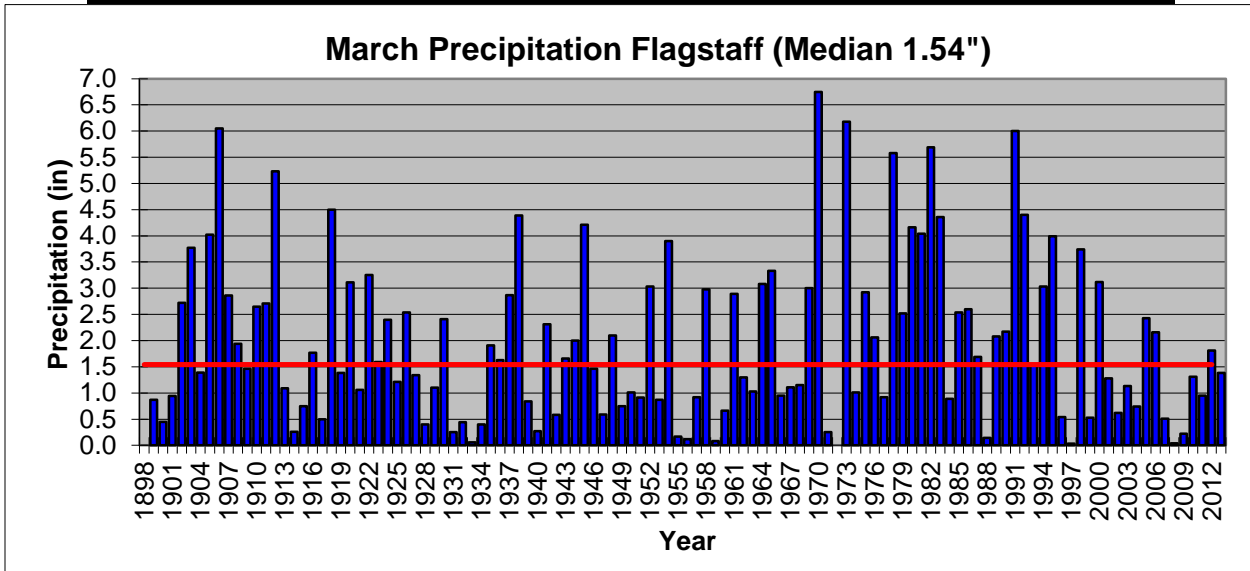
2013 Water Year

Minimum temperatures have ranged from 4 degrees colder than normal to 2 degrees warmer than normal, with the warmer temperatures across Maricopa and central Mohave counties. Maximum temperatures are generally 0-2°F warmer than normal, with slightly cooler temperatures in eastern Gila County. Through the end of March, the water year remains much drier than normal, generally less than 70% of average across most of the southern part of the state. The only wet areas continue to be the lower Colorado River valley in Mohave and La Paz counties and northern Gila County.

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

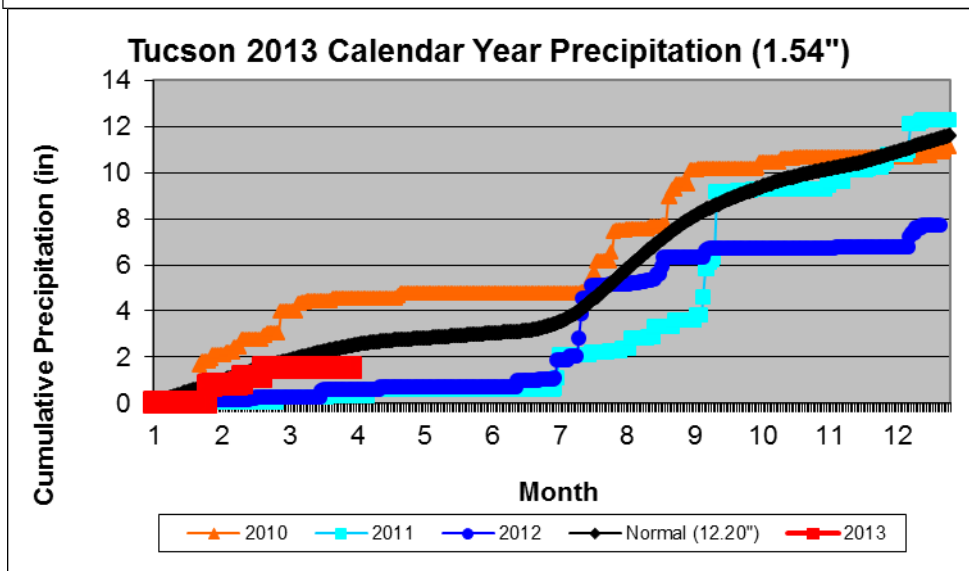
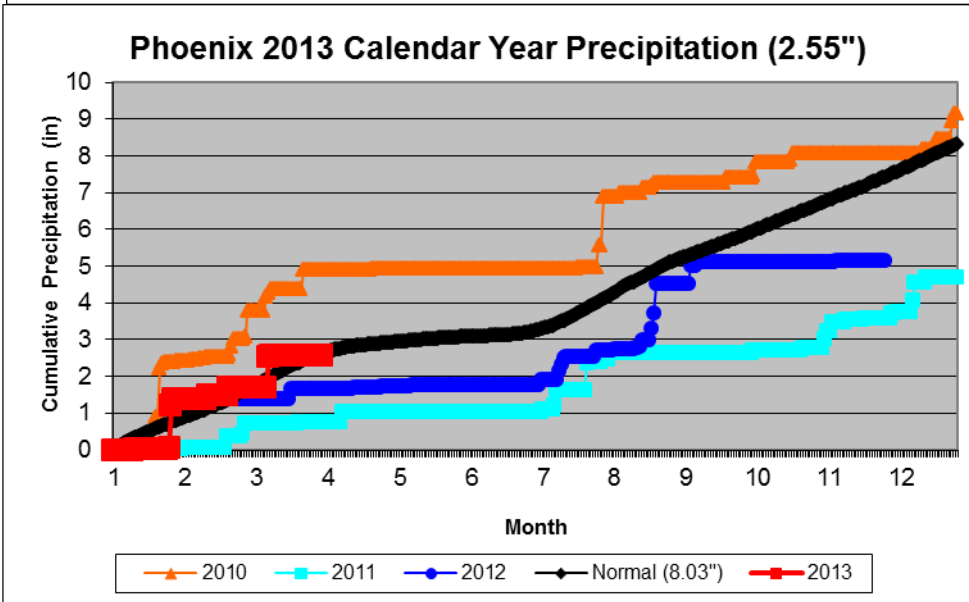
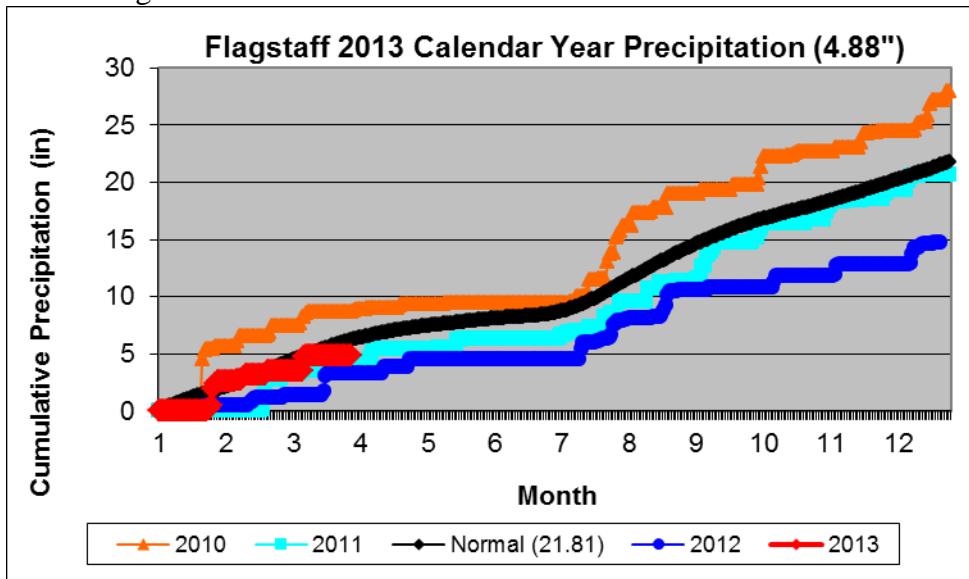


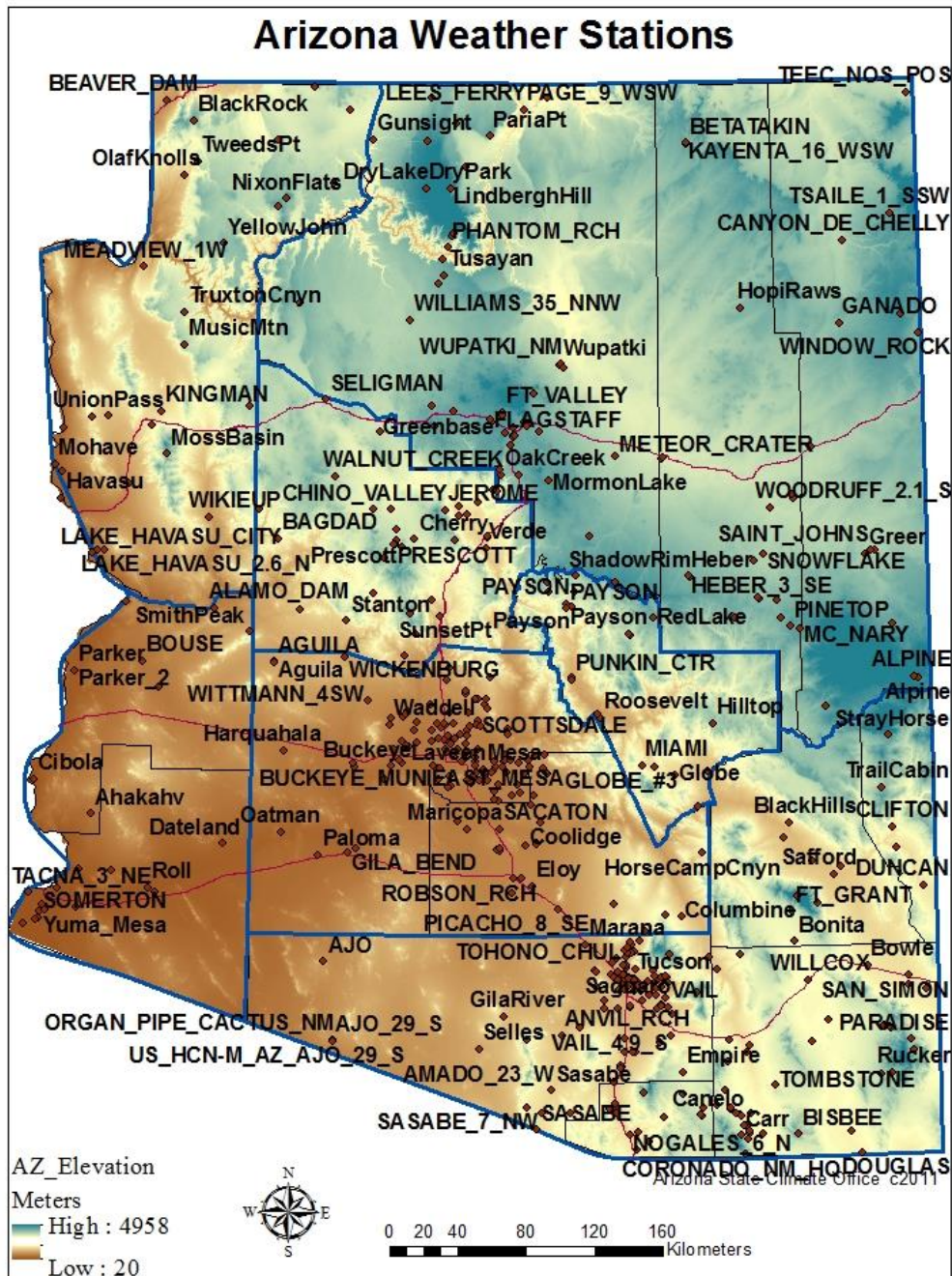
March Mean Precipitation Graphs – Flagstaff, Phoenix, and Tucson 1895-2013:



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)