



Arizona Climate Summary

December 2013

Summary of conditions for November 2013

November 2013 Temperature and Precipitation Summary

November 1st – 16th: The tail end of a low pressure system swept down from the Pacific Northwest over the first week of the month bringing a little rain and snow to Arizona. Totals were quite low because there was not a lot of moisture to work with. On the 3rd, Tucson received 0.12” of rain and Phoenix received a trace of rainfall by the 4th. On the 5th precipitation was more widespread, but the most was 0.49” at Saint Johns, and 0.35” at Cast Hot Springs. Flagstaff received no precipitation from this system. Dry conditions followed with no further precipitation until the 15th, when a small upper level disturbance moved and tapped into a little moisture, with Flagstaff receiving about 0.06”. Also on the 16th, Flagstaff recorded their peak wind gust for the month at 42 mph. Phoenix and Tucson were able to set/tie old HiMin records. On the 13th, a new HiMin record was set at 69 degrees from 67 degrees in 1983 for Phoenix. Tucson set a new HiMin at 63 degrees from 60 degrees in 1990. In Phoenix on the 14th, the old HiMin record of 63 degrees from 1990 was tied as well as the HiMin for the 15th which was tied at 62 degrees. Tucson tied another HiMin record of 60 degrees on the 16th which was originally set in 1936. The warm nighttime temperatures were the result of very warm daytime temperatures followed by nighttime cloud cover that trapped the heat below the clouds.

November 17th – 30th: The beginning of the third week of November started off with relatively fair weather conditions due to a more zonal flow of the jet stream. However, as the week progressed, gradients within the main flow became tighter creating stronger jet maximums and the flow became more meridional. A well-defined low pressure system made its way into the southwest creating uplift for the moisture that was pumped up from the Pacific Ocean. The available moisture was significant and the storm moved very slowly, so rain and snowfall totals were quite high. On the 22nd, Flagstaff received 1.01” of precipitation, a new record, and Phoenix reported 1.60” of precipitation, also a new record. Additionally, Phoenix received 0.42” of precipitation the previous day which set a new record, beating the original record of 0.24” in 1963. Tucson received 0.87” on the 22nd, but 1.21” the following day. No additional records were set or tied for Tucson. On the 22nd, Flagstaff set a new snowfall record of 5.6”, breaking the previous record of 5” in 1902.

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

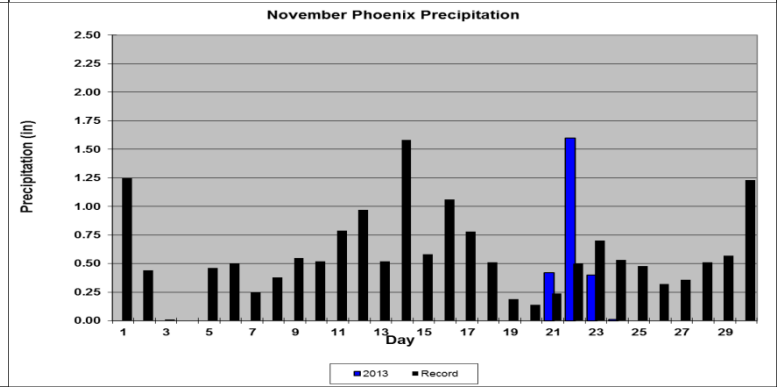
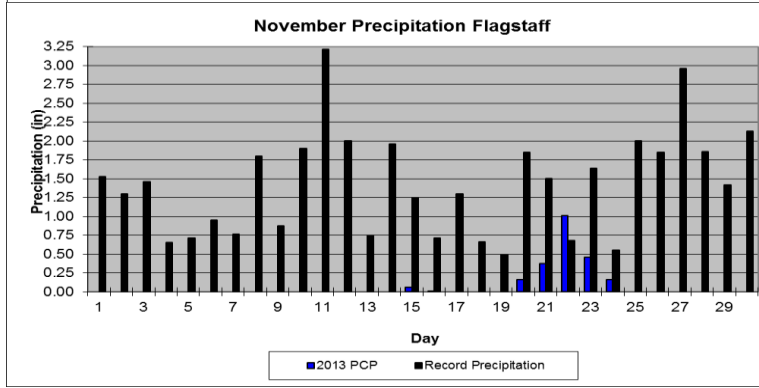
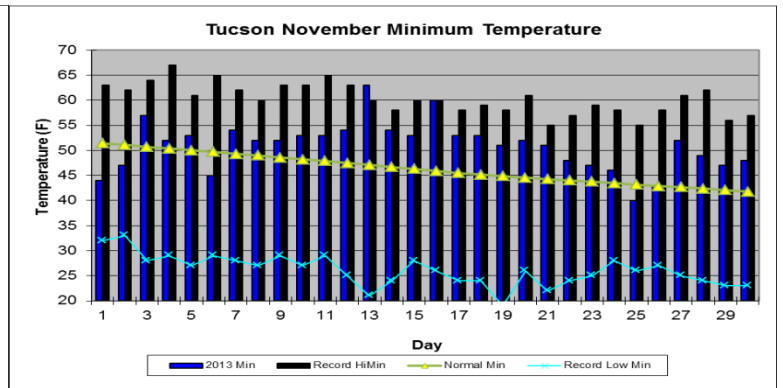
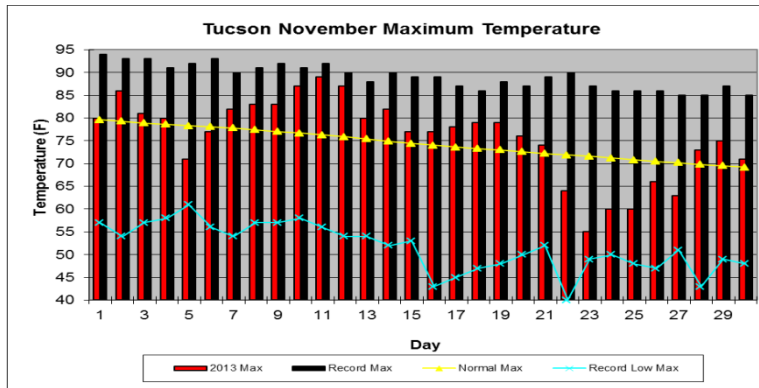
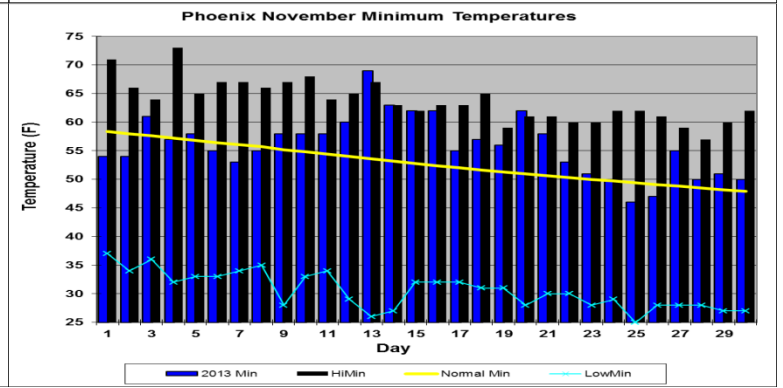
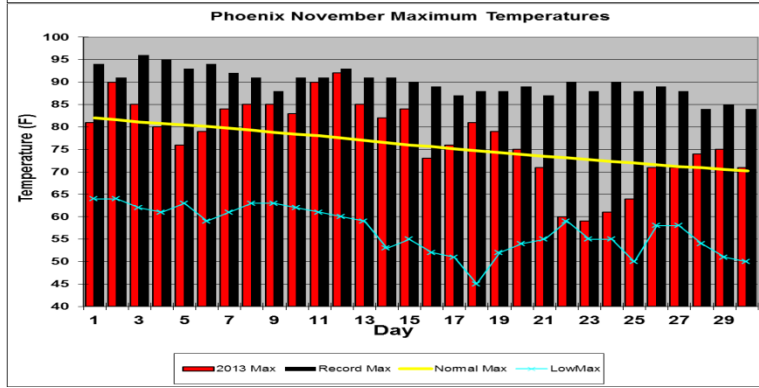
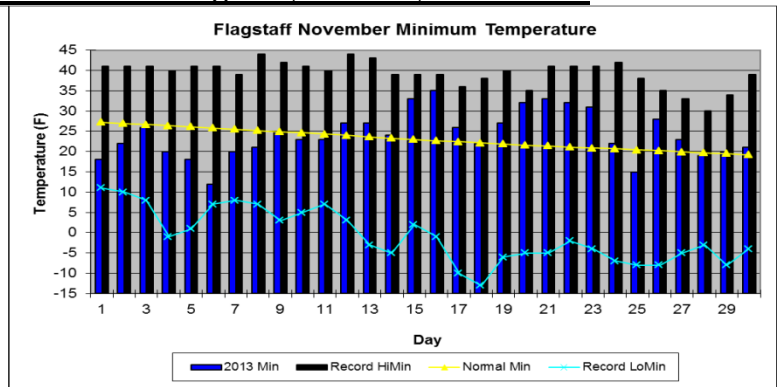
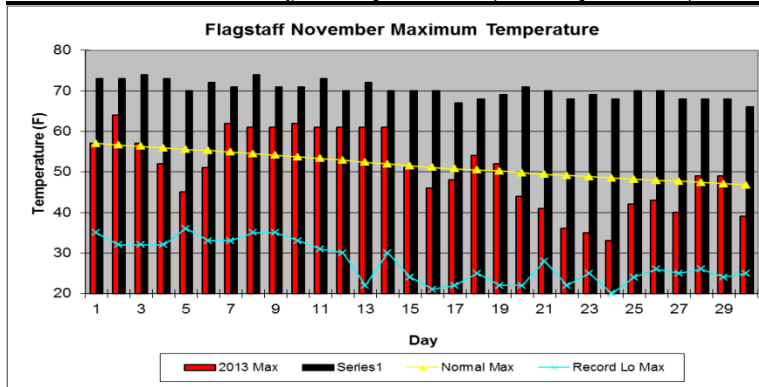
****Note:** The discrepancy between the Statewide Temperature and Precipitation values for Phoenix, Flagstaff and Tucson and the daily values in their graphs are due to the reporting times. Statewide Temperature and Precipitation values are taken at 5pm, while official daily records at the airports are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

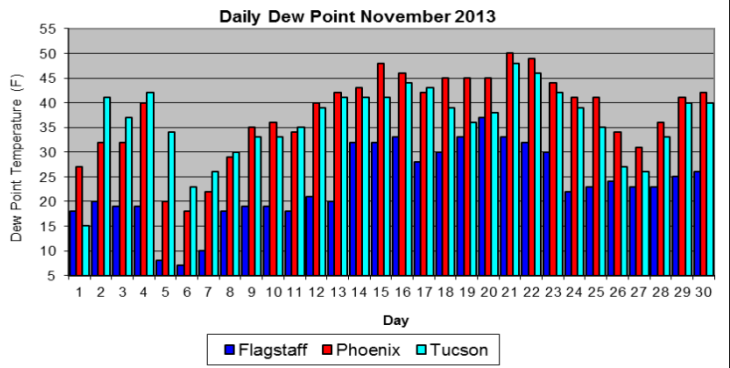
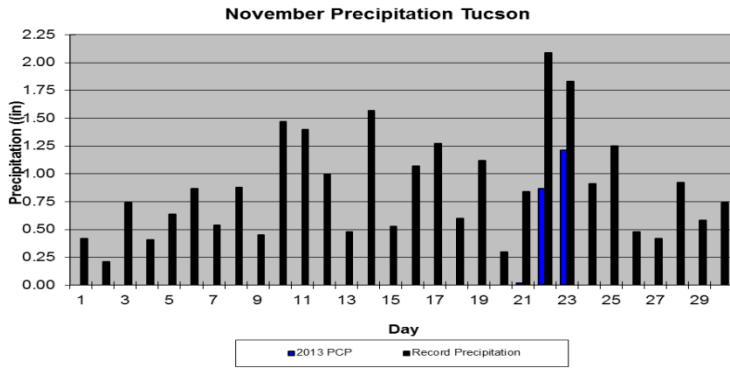
State Climate Office
Dr. Nancy J. Selover, State Climatologist
<http://azclimate.asu.edu> Tel: 480-965-6265
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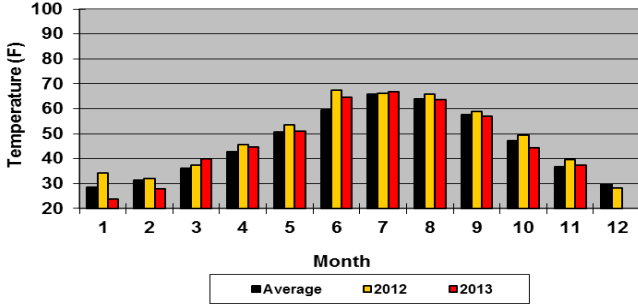
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November 2013 Daily Temperature, Precipitation, & Dew Point for Flagstaff, Phoenix, and Tucson

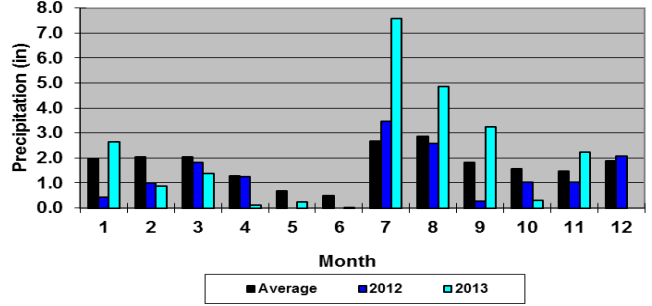




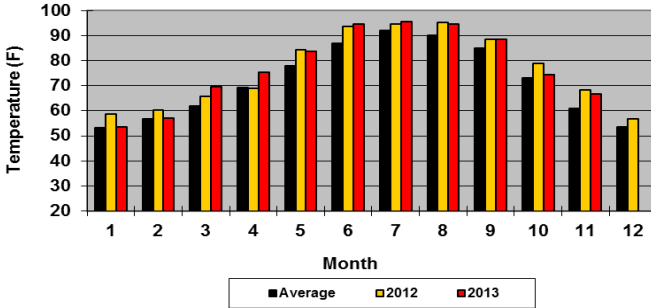
Flagstaff Mean Monthly Temperature
Annual average (1899-2012) = 45.9°F



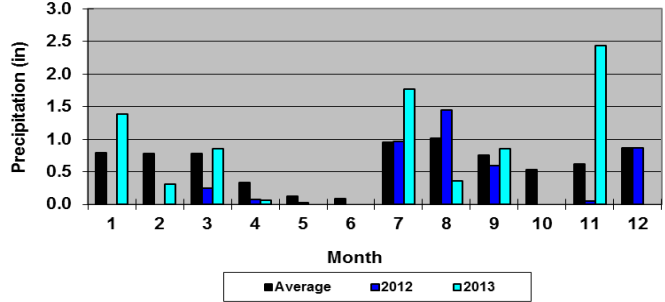
Flagstaff Mean Monthly Precipitation
Annual average (1899-2012) = 20.68"



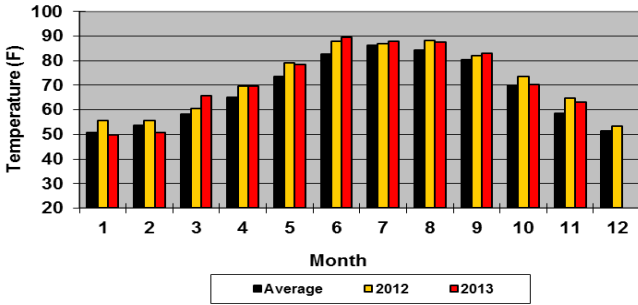
Phoenix Mean Monthly Temperature
Annual Average (1896-2012) = 71.2"



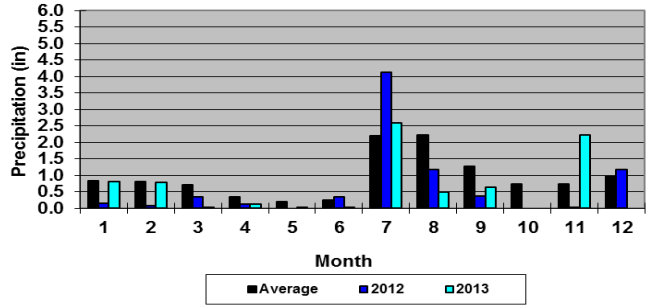
Phoenix Mean Monthly Precipitation
Annual Average (1896-2012) = 7.50"



Tucson Mean Monthly Temperature
Annual average (1895-2012) = 68.0°F



Tucson Mean Monthly Precipitation
Annual average (1895-2012) = 11.15"



Heating Degree Days	54	Normal	97
Cooling Degree Days	111	Normal	70
Degree base 65°F			
Total November Precipitation	2.43"		
Normal November Precipitation	0.65"		
Departure from normal	1.78"		
Greatest 24-Hr Precipitation	1.79	on 11/21-22	
Total Precipitation Year-to-Date	8.03"		
Departure from Normal	0.88"		

<u>Number of Days:</u>	
Clear	16
Partly Cloudy	11
Cloudy	3
Greatest November Precipitation	3.61" in 1905
Least November Precipitation	0.00" in 2006 and 24 other years
Average Wind Speed	5.6 mph
Highest Peak Gust	29 mph from 250° on 4 th

TUCSON CLIMATE STATISTICS November 2013

This November was the 7th warmest and the 7th wettest on record.

Avg Max Temp(F)	75.8	Normal	73.5
Avg Min Temp(F)	50.9	Normal	46.1
Avg Mean Temp(F)	63.3	Normal	59.8
Departure from Normal (F)	3.5		
Highest Monthly Avg Temp (F)	65.7	in 2007	
Lowest Monthly Avg Temp (F)	50.9	in 1911	

Highest Temp this month (F): 89 on 11th
 Lowest Temp this month (F): 40 on 25th

Record High (F): 93 on 11/03/2009
 11/06/1999
 11/06/1934
 Record Low (F): 19 on 11/19/1921

No temperature or precipitation records this month.
 13th HiMin 63 set, previous record 60 in 1990
 16th HiMin 60 tied, first set in 1936

Tucson Number of Days of:

Minimum Temp 45°F or lower	4
Minimum Temp 60°F or higher	2
Maximum Temp 55°F or lower	1
Maximum Temp 85°F or higher	4

Heating Degree Days	93	Normal	182
Cooling Degree Days	49	Normal	27
Degree base 65°F			
Total November Precipitation	2.22"		
Normal November Precipitation	0.57"		
Departure from normal	1.65"		
Greatest 24-Hr Precipitation	1.72"	on 11/22-23	
Total Precipitation Year-to-Date	7.70"		
Departure from Normal	-2.96"		
Greatest November Precipitation	4.61"	in 1905	
Least November Precipitation	0.00"	in 2006 and 22 other years	

<u>Number of Days:</u>	
Clear	21
Partly Cloudy	3
Cloudy	2

Average Wind Speed	7.9 mph
Highest Peak Gust	42 mph from 120° on 13 th

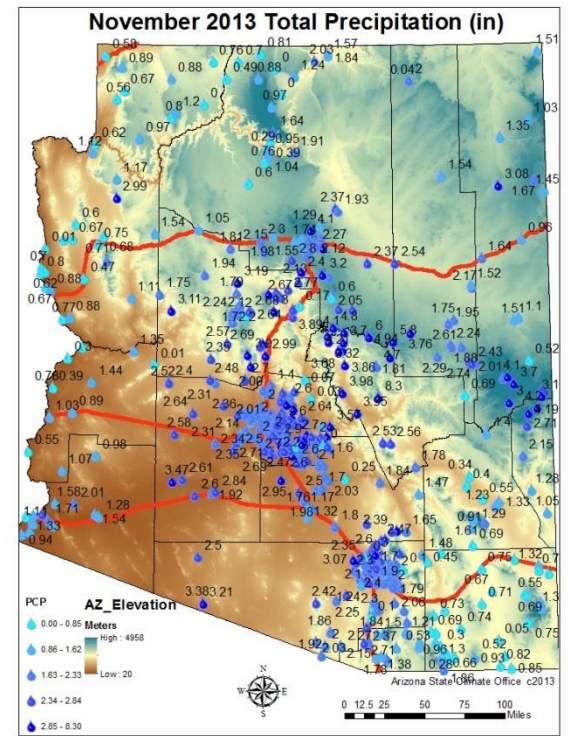
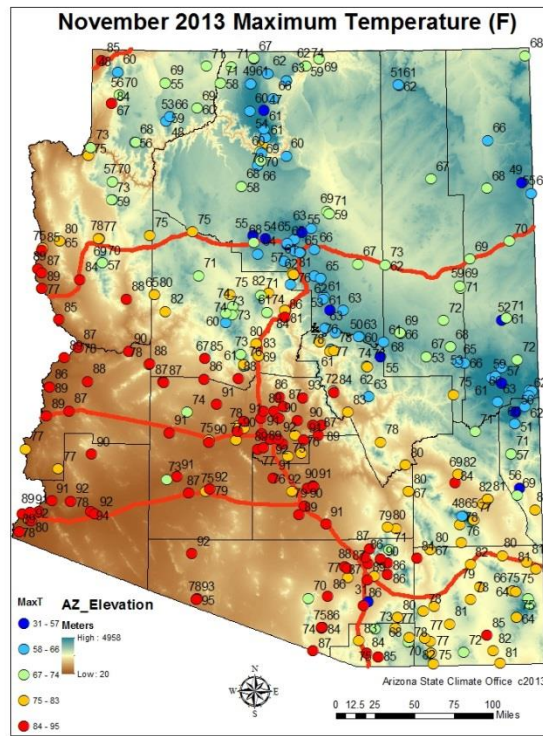
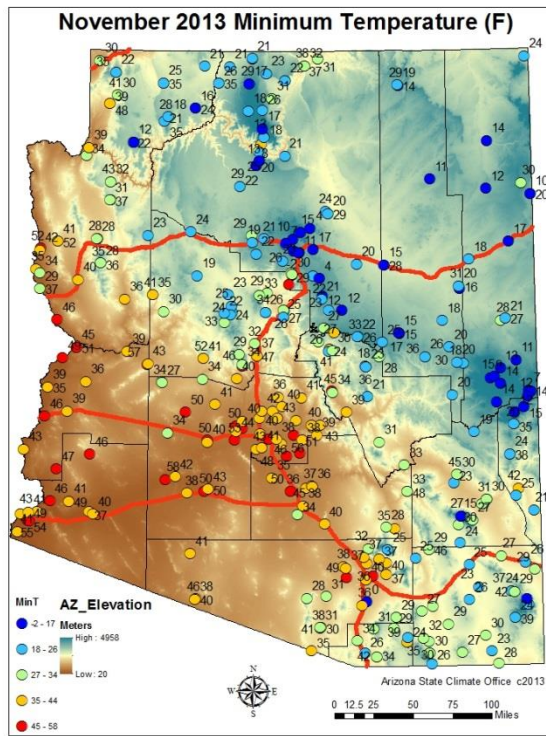
Data are from the National Weather Service and the National Climatic Data Center and are **preliminary**.

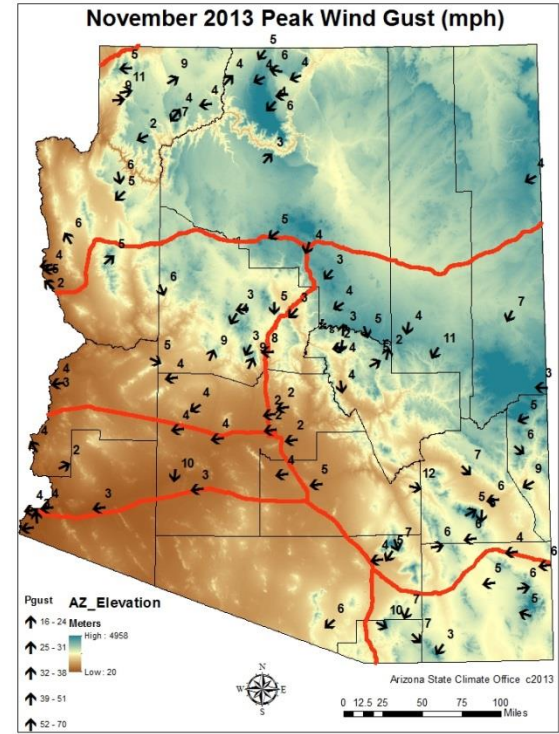
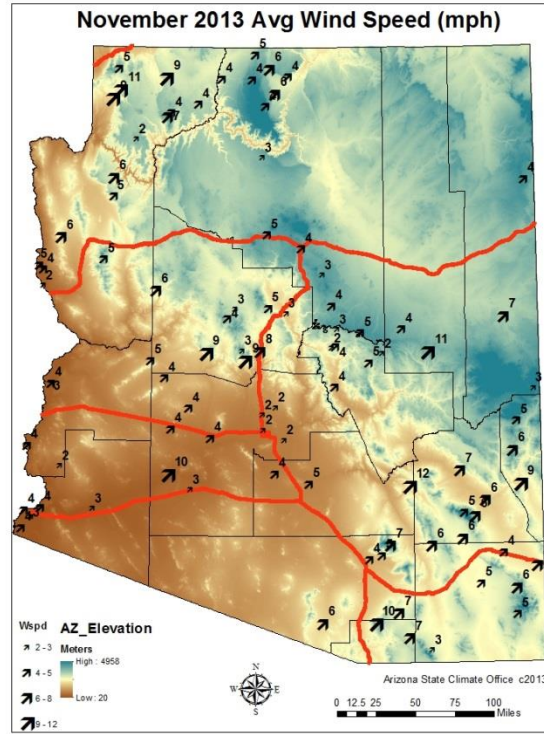
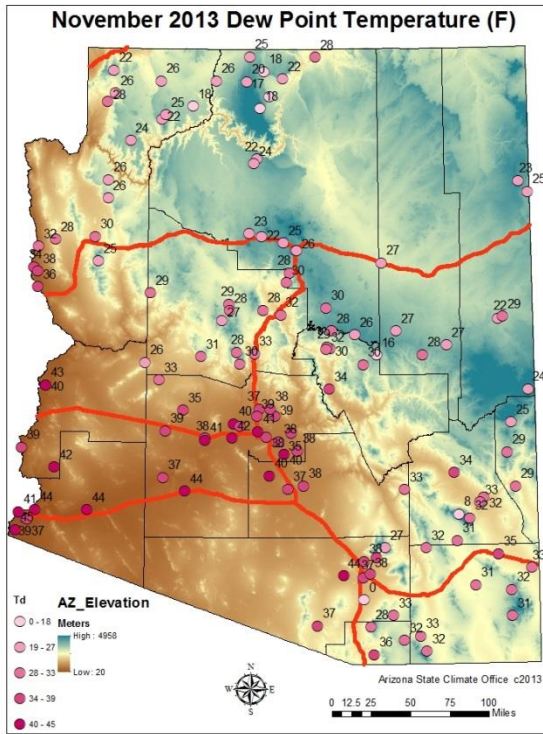
Winds for November:

Day	Phoenix		Flagstaff		Tucson	
	Avg	Max	Avg	Max	Avg	Max
1	4.3	16	5.2	27	5.65	20
2	5.9	24	4.4	27	8.8	32
3	5.3	16	8.9	37	7.1	20
4	8.9	29	7.4	31	9	30
5	4.8	21	6.5	21	5.4	18
6	5.9	21	4.5	18	4.6	14
7	5.5	22	4.2	18	12	40
8	4	14	4.5	23	5.8	15
9	4	14	3.8	21	5.6	14
10	3.4	14	0.9	12	5.8	17
11	2.5	13	4.8	22	5.9	17
12	7.2	23	5.2	19	12.1	32
13	9.2	27	2.6	16	16.7	42
14	5.6	17	4.2	21	5.6	17
15	9	22	11.9	36	9.7	35
16	5.4	18	16	42	10.5	27
17	5.4	16	6.7	21	5.4	22
18	3.4	13	3.2	20	5.3	16
19	5.1	16	6.2	26	6	17
20	4.2	15	7.2	28	6.1	19
21	5.1	15	7.4	23	6.1	22
22	6.7	26	10.5	28	7.2	22
23	8.5	24	6.5	24	6.6	22
24	4.9	15	2.4	10	6.9	19
25	2.3	9	6.4	31	3.4	16
26	8.4	23	10.4	27	15.3	39
27	10.5	23	6.5	20	19	40
28	5.1	17	2.2	17	9.3	30
29	4.6	15	2.2	10	5.7	18
30	2.3	11	3.9	11	3.4	18

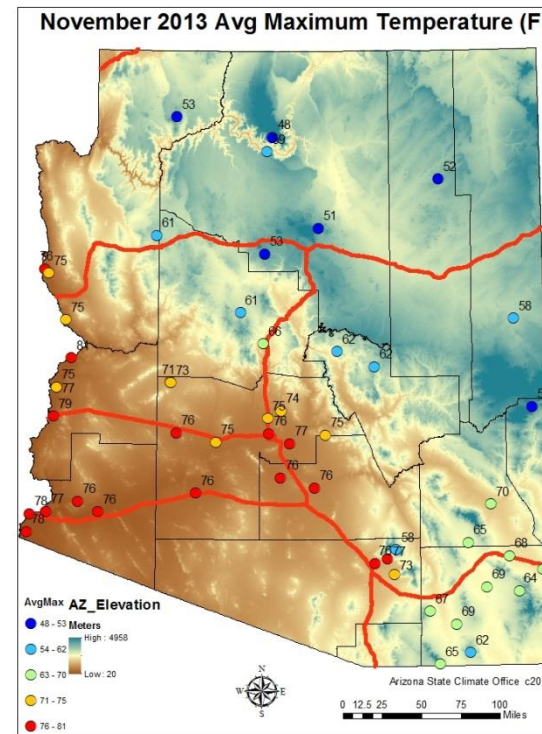
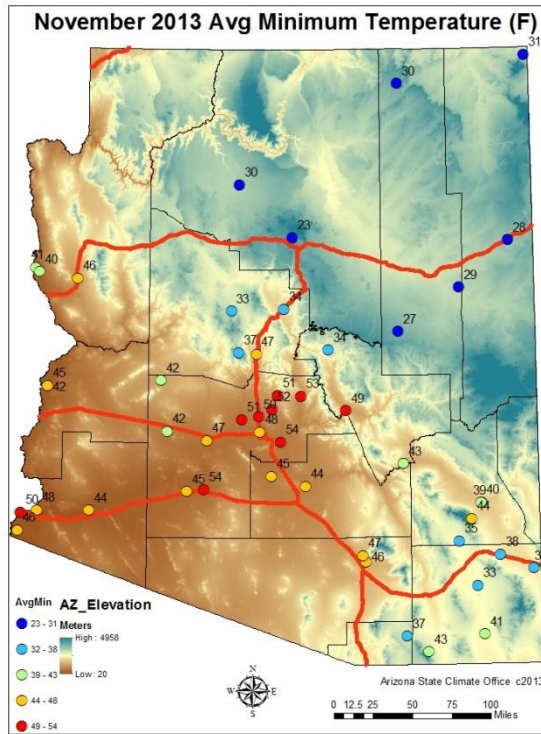
Dew Points for November:**Daily Average Dew Point (°F):**

Day	Phx	Tuc	Flg
1	27	15	18
2	32	41	20
3	32	37	19
4	40	42	19
5	20	34	8
6	18	23	7
7	22	26	10
8	29	30	18
9	35	33	19
10	36	33	19
11	34	35	18
12	40	39	21
13	42	41	20
14	43	41	32
15	48	41	32
16	46	44	33
17	42	43	28
18	45	39	30
19	45	36	33
20	45	38	37
21	50	48	33
22	49	46	32
23	44	42	30
24	41	39	22
25	41	35	23
26	34	27	24
27	31	26	23
28	36	33	23
29	41	40	25
30	42	40	26





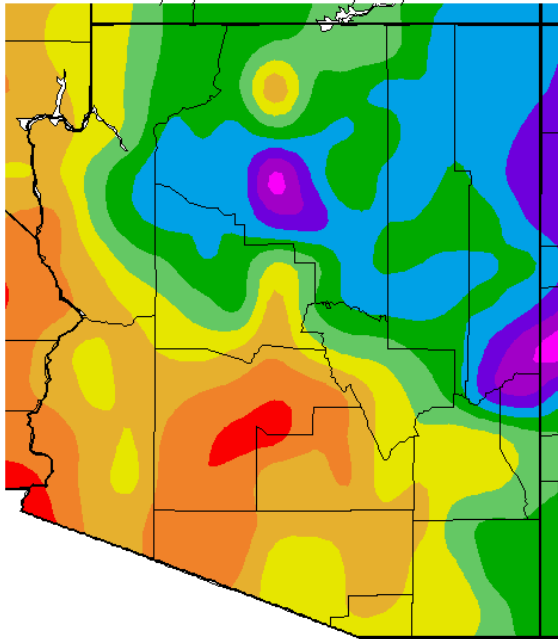
The lowest minimum temperature was -2°F at Flagstaff, and the highest minimum was 58°F at Oatman. The lowest maximum temperature of 31°F was recorded at Sahuarito, while the highest maximum temperature of 95°F was reported at Organ Pipe National Monument. The lowest rainfall amount was $0.00''$ at Flowing Wells and the highest was $8.30''$ at Workman Creek, with $6.00''$ at Promontory. The lowest dew point was 8°F at Columbine and the highest was 45°F at Yuma. The highest peak wind gust was 70 mph at Parker.



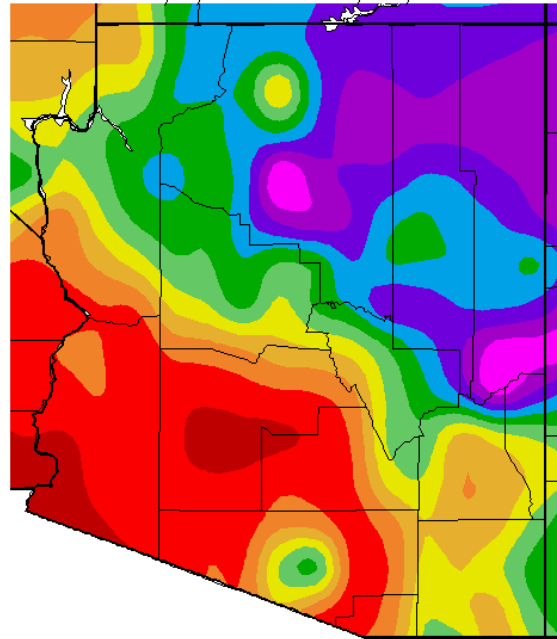
November 2013

The highest average minimum temperature was 56.6°F at Mormon Lake, and the lowest average minimum temperature was 12.4°F at Flagstaff. The highest average maximum temperature was 81°F at Parker and lowest average maximum temperature was 41.4°F at Snowslide.

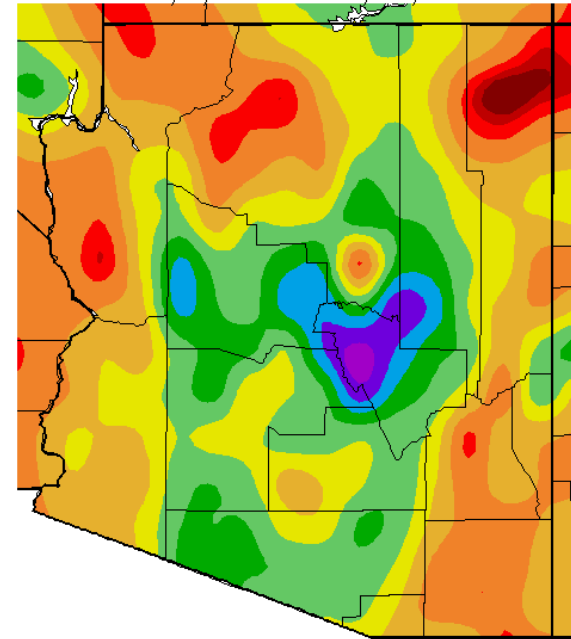
Av. Min. Temperature (deg. F)
11/1/2013 – 11/30/2013



Av. Max. Temperature (deg. F)
11/1/2013 – 11/30/2013



Total Precipitation (in.)
11/1/2013 – 11/30/2013

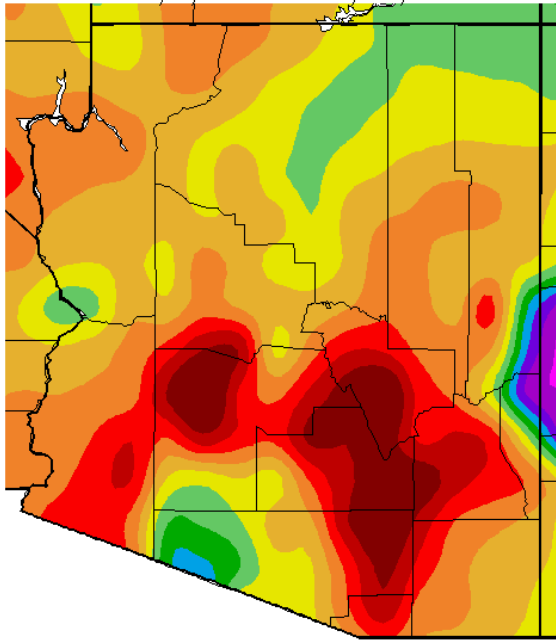


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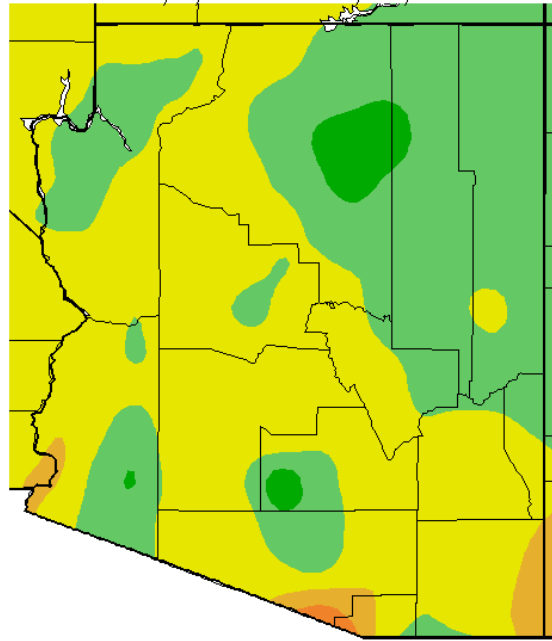
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NOAA Regional Climate Centers

Av. Min. Temperature dep from Ave (deg. F)
11/1/2013 – 11/30/2013



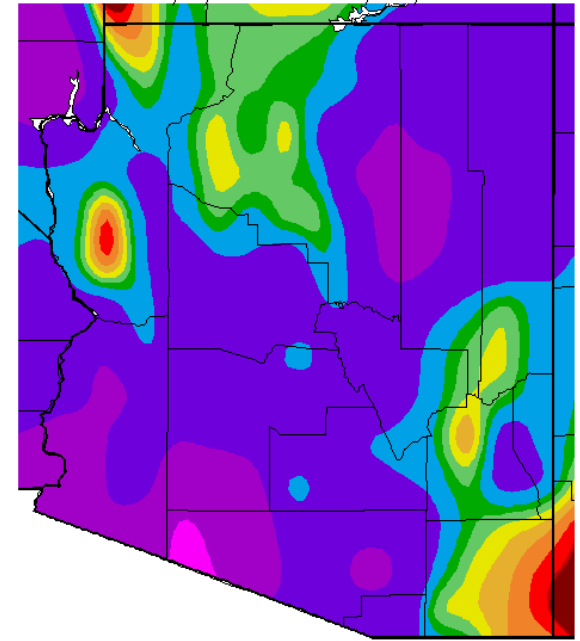
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Av. Max. Temperature dep from Ave (deg F)
11/1/2013 – 11/30/2013



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NOAA Regional Climate Centers

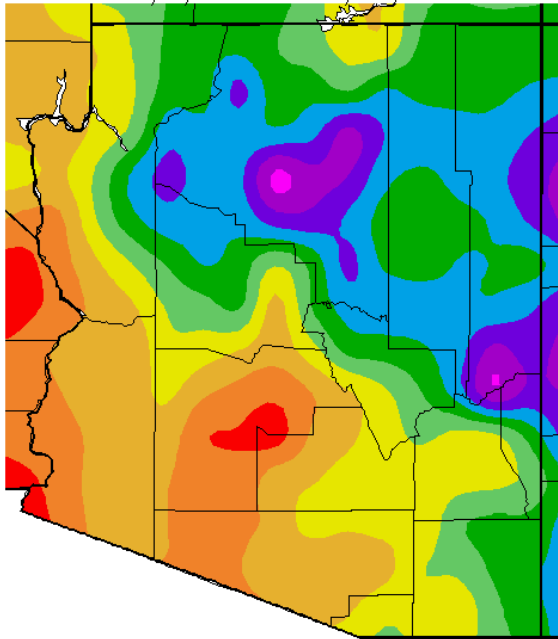
Percent of Average Precipitation (%)
11/1/2013 – 11/30/2013



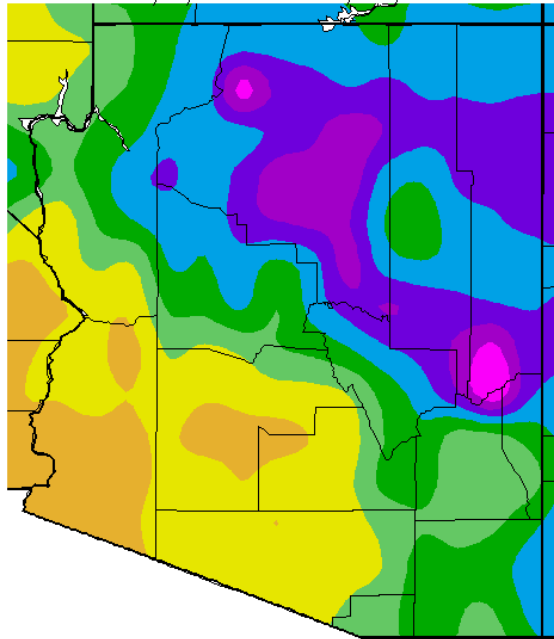
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November minimum temperatures were 4 to 6°F warmer than normal in south central Arizona and 1 to 3°F cooler than normal in western Pima County and along the New Mexico border in Greenlee and southern Apache Counties. Daytime temperatures were within 2°F of normal statewide. November precipitation was normal to heavy in most areas of the state.

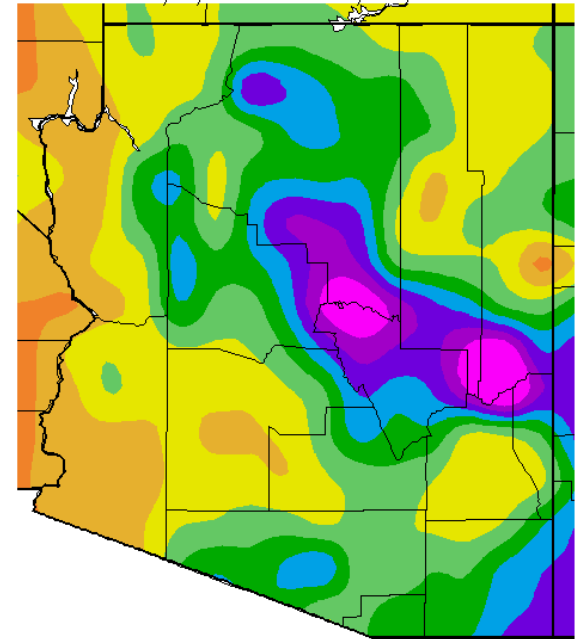
Av. Min. Temperature (deg. F)
1/1/2013 – 11/30/2013



Av. Max. Temperature (deg. F)
1/1/2013 – 11/30/2013



Total Precipitation (in.)
1/1/2013 – 11/30/2013

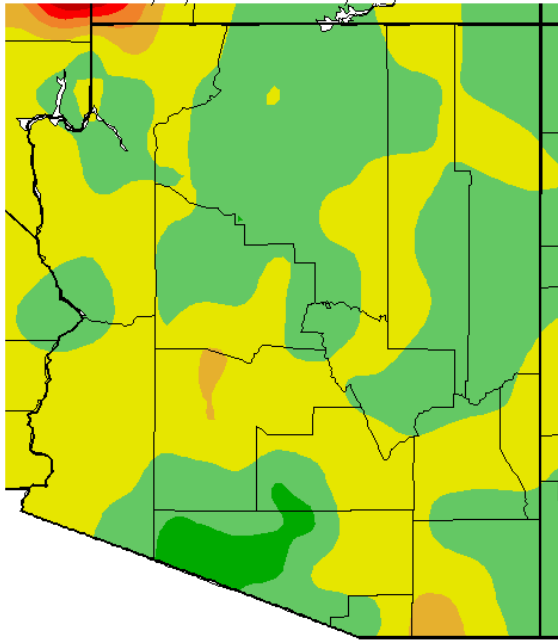


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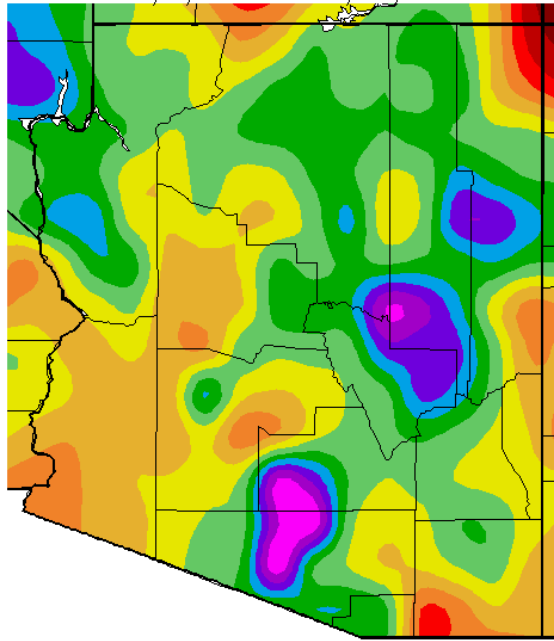
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Av. Min. Temperature dep from Ave (deg. F)
1/1/2013 – 11/30/2013



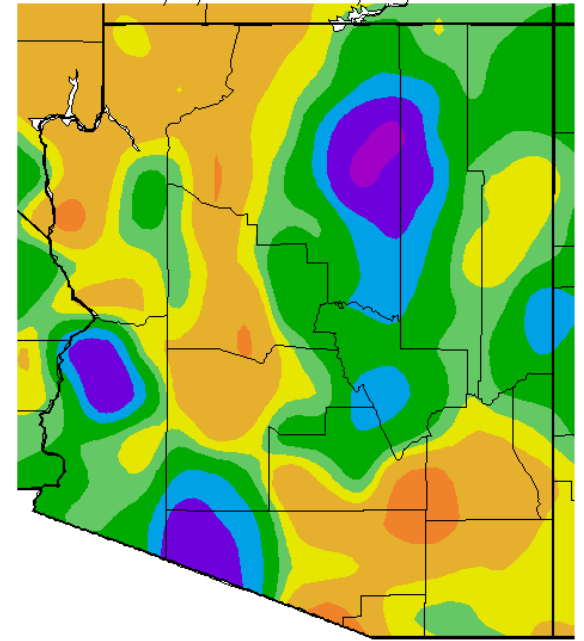
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Av. Max. Temperature dep from Ave (deg F)
1/1/2013 – 11/30/2013



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Percent of Average Precipitation (%)
1/1/2013 – 11/30/2013

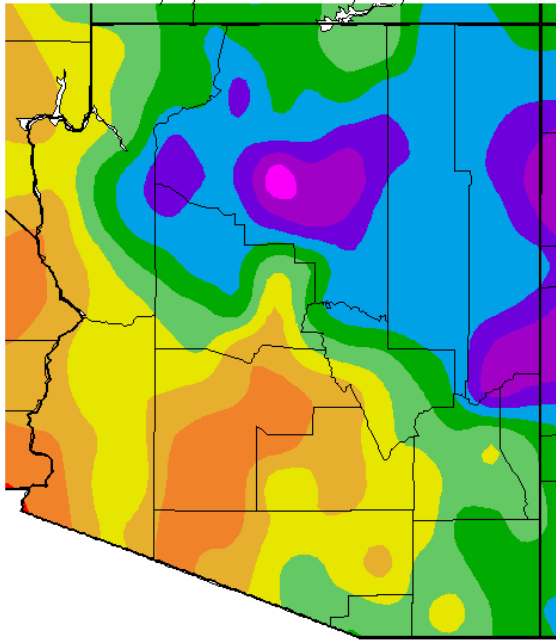


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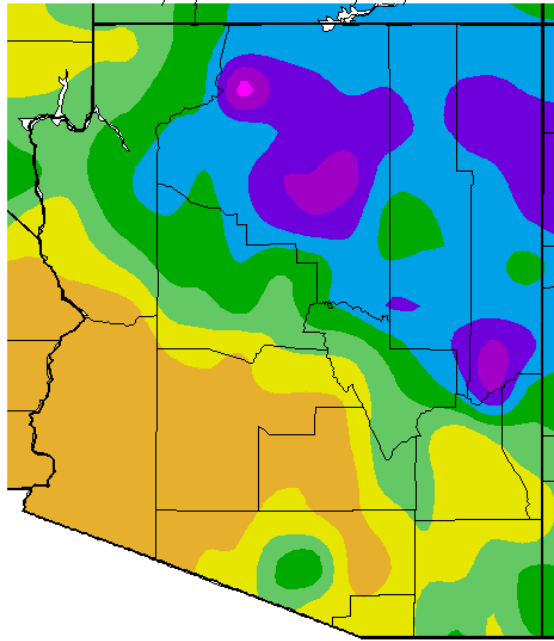
Calendar Year 2013

Nighttime temperatures for the calendar year are still within 2°F of normal for this time of year. Daytime temperatures have been more variable around the state, with a few very cold pockets including southern Navajo County, and central Pima and western Pinal counties. Precipitation for the year is between 70 and 300% of normal, with the Colorado Plateau and the southwest wetter than normal and the southeast and northwest drier than normal. Prior to the late November storms, much of the southern half of the state was drier than normal.

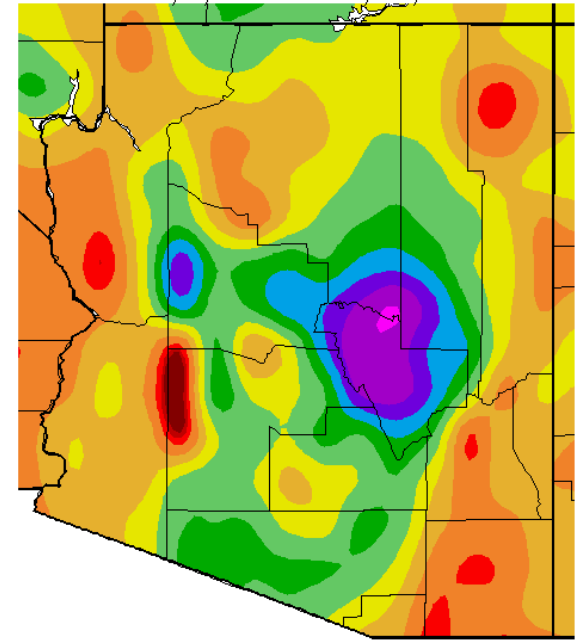
Av. Min. Temperature (deg. F)
10/1/2013 – 11/30/2013



Av. Max. Temperature (deg. F)
10/1/2013 – 11/30/2013



Total Precipitation (in.)
10/1/2013 – 11/30/2013

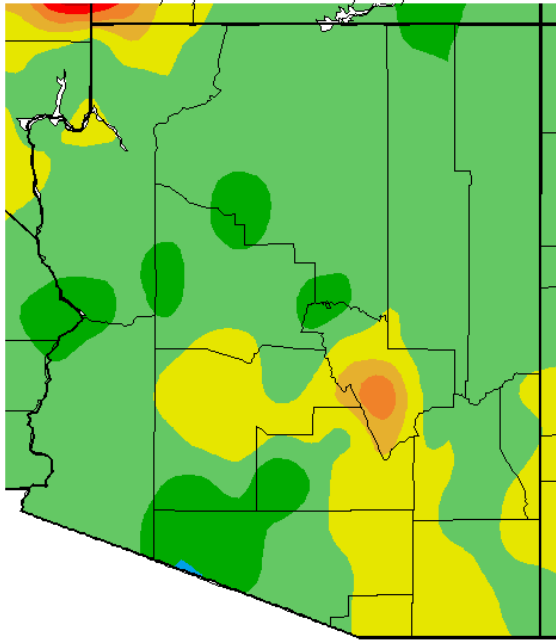


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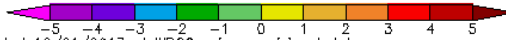
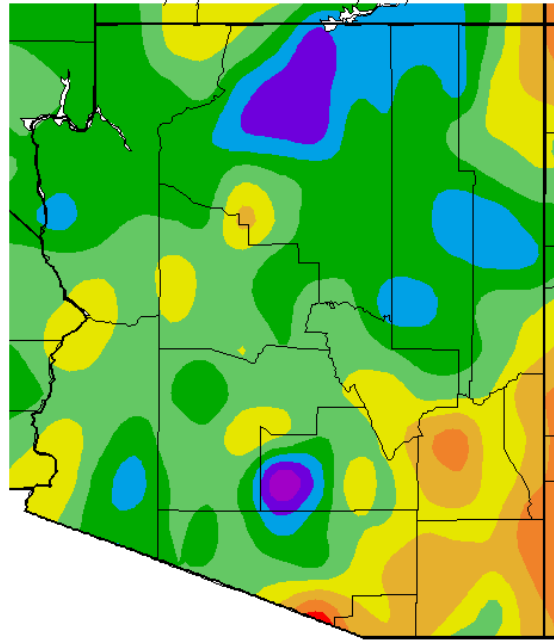
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Av. Min. Temperature dep from Ave (deg. F)
10/1/2013 – 11/30/2013



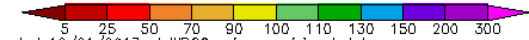
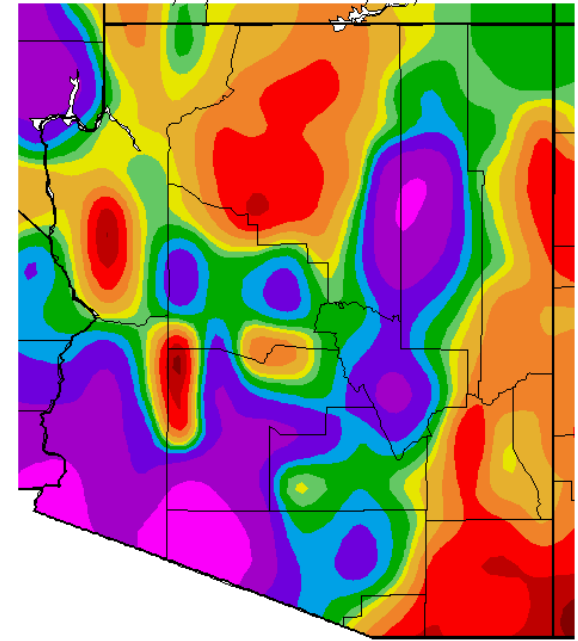
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Av. Max. Temperature dep from Ave (deg F)
10/1/2013 – 11/30/2013



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NOAA Regional Climate Centers

Percent of Average Precipitation (%)
10/1/2013 – 11/30/2013

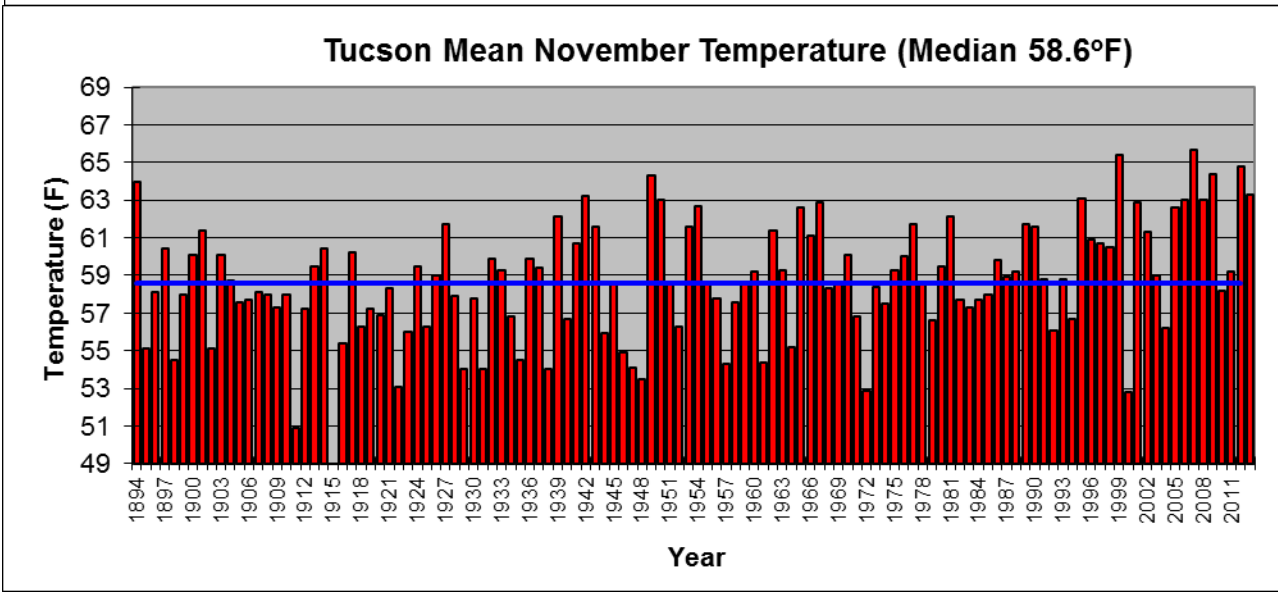
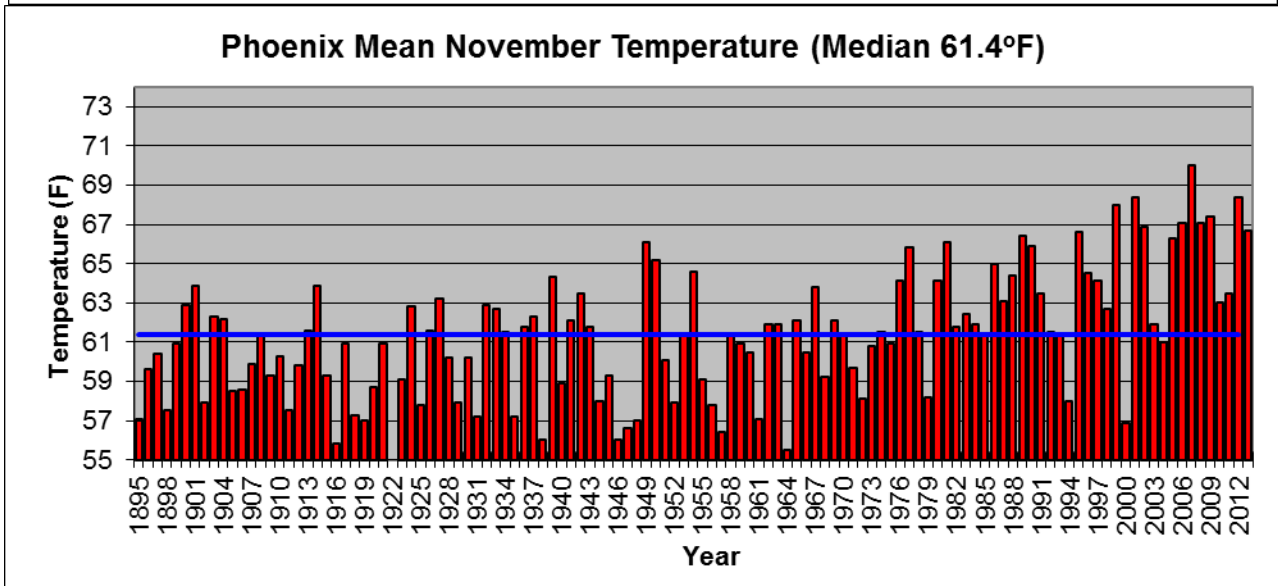
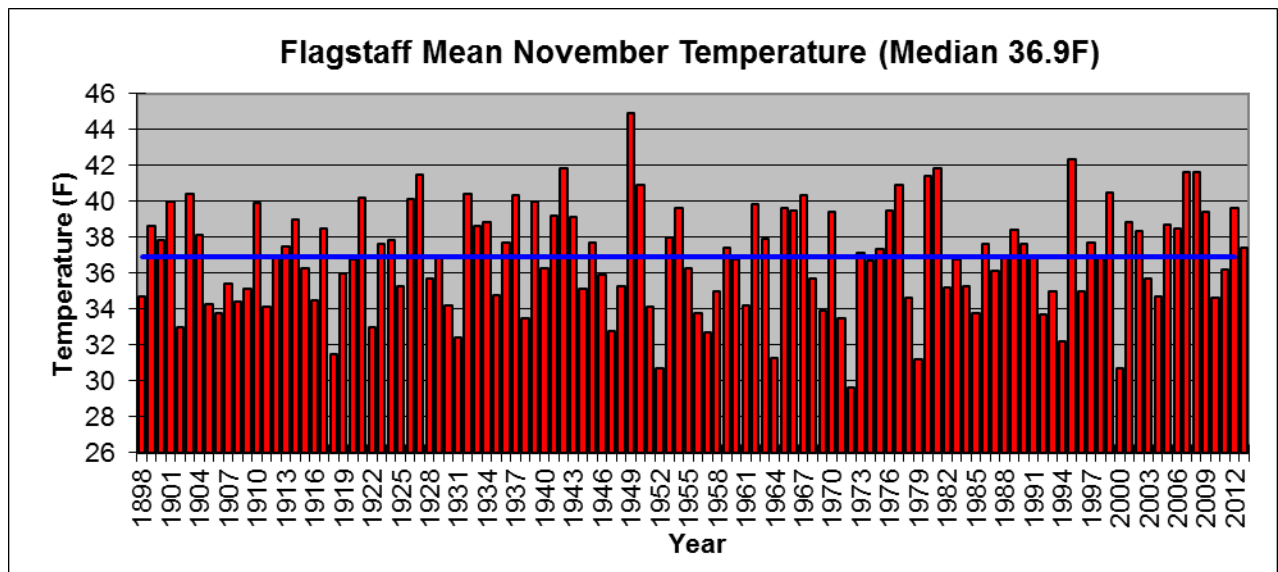


Generated 12/01/2013 at WRCC using provisional data.
NOAA Regional Climate Centers

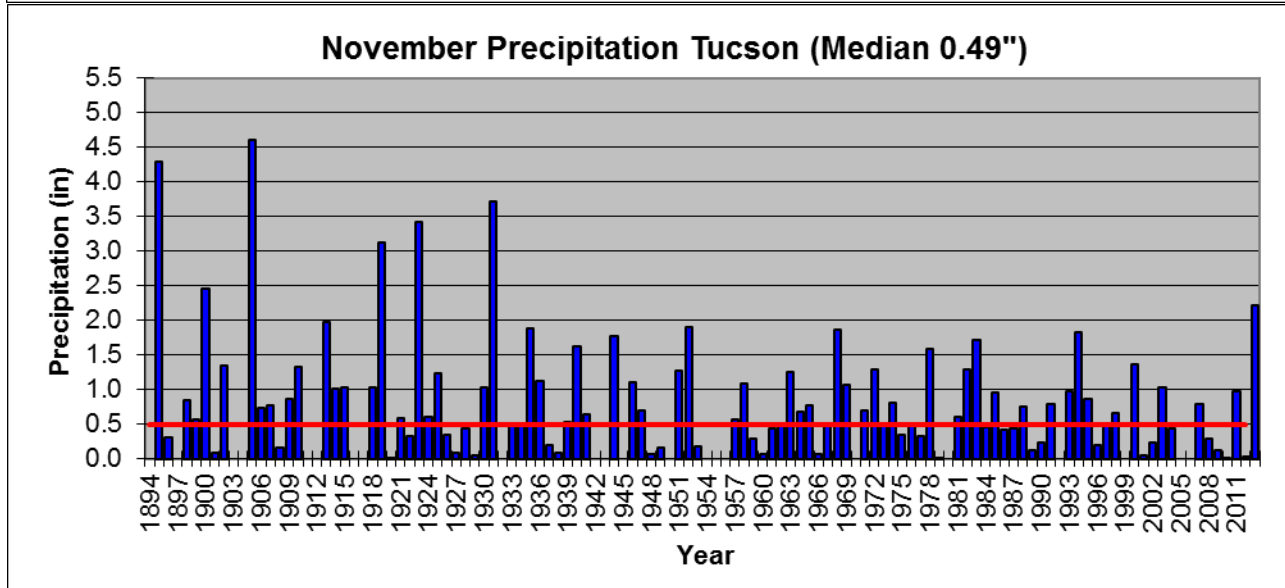
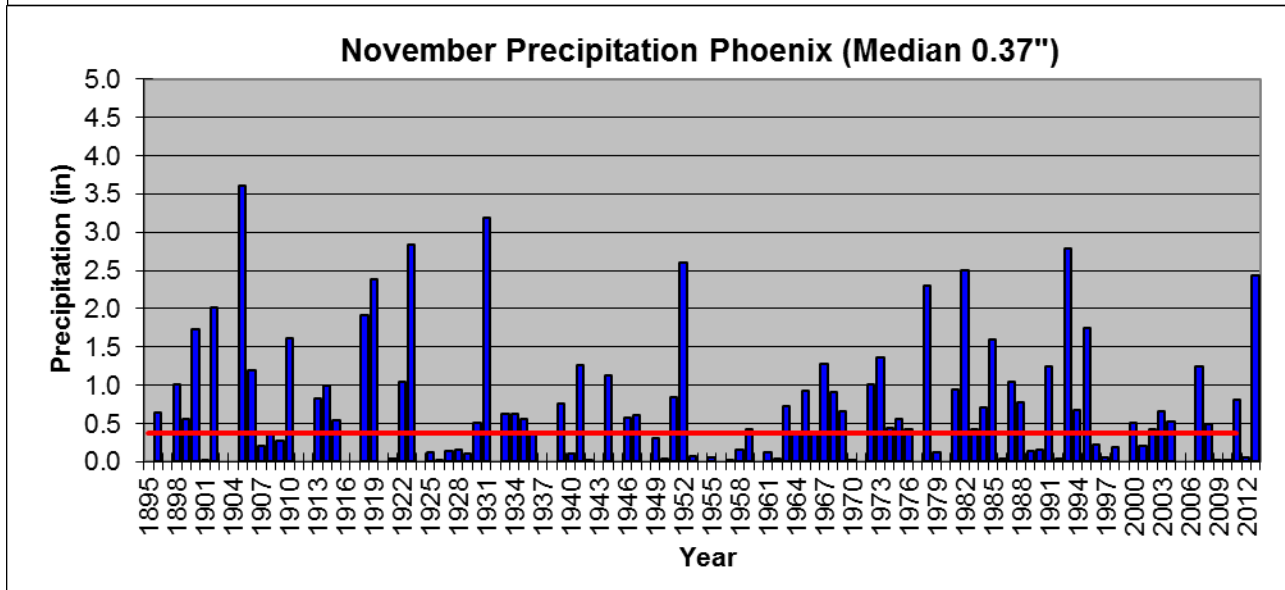
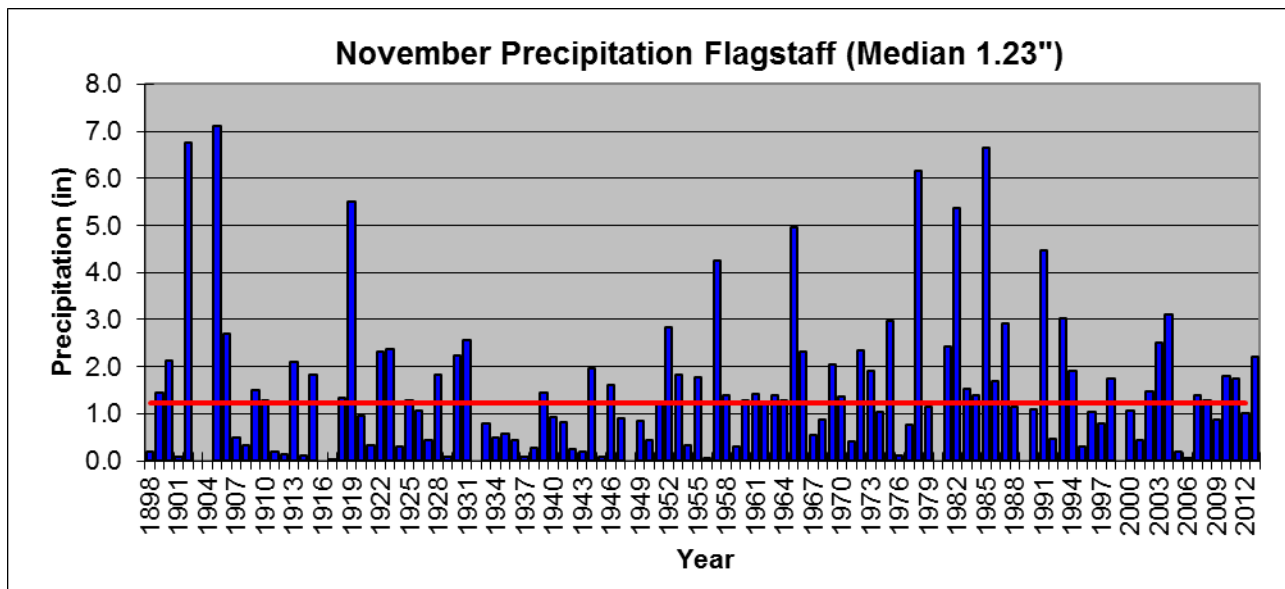
2014 Water Year

The new water year began with minimum temperatures 2° to 6°F cooler than normal statewide, but warm conditions in November across southern Arizona have brought the averages up. Daytime temperatures are also generally cooler than normal, with the Colorado Plateau 1-4°F colder than normal, as was southwestern Arizona. Southeastern Arizona is still 1-3°F warmer than normal. November precipitation was heavy across most of the state, but the southeast and the Kaibab Plateau in north central Arizona are still much drier than normal for the two month period from October 1 through November 30.

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

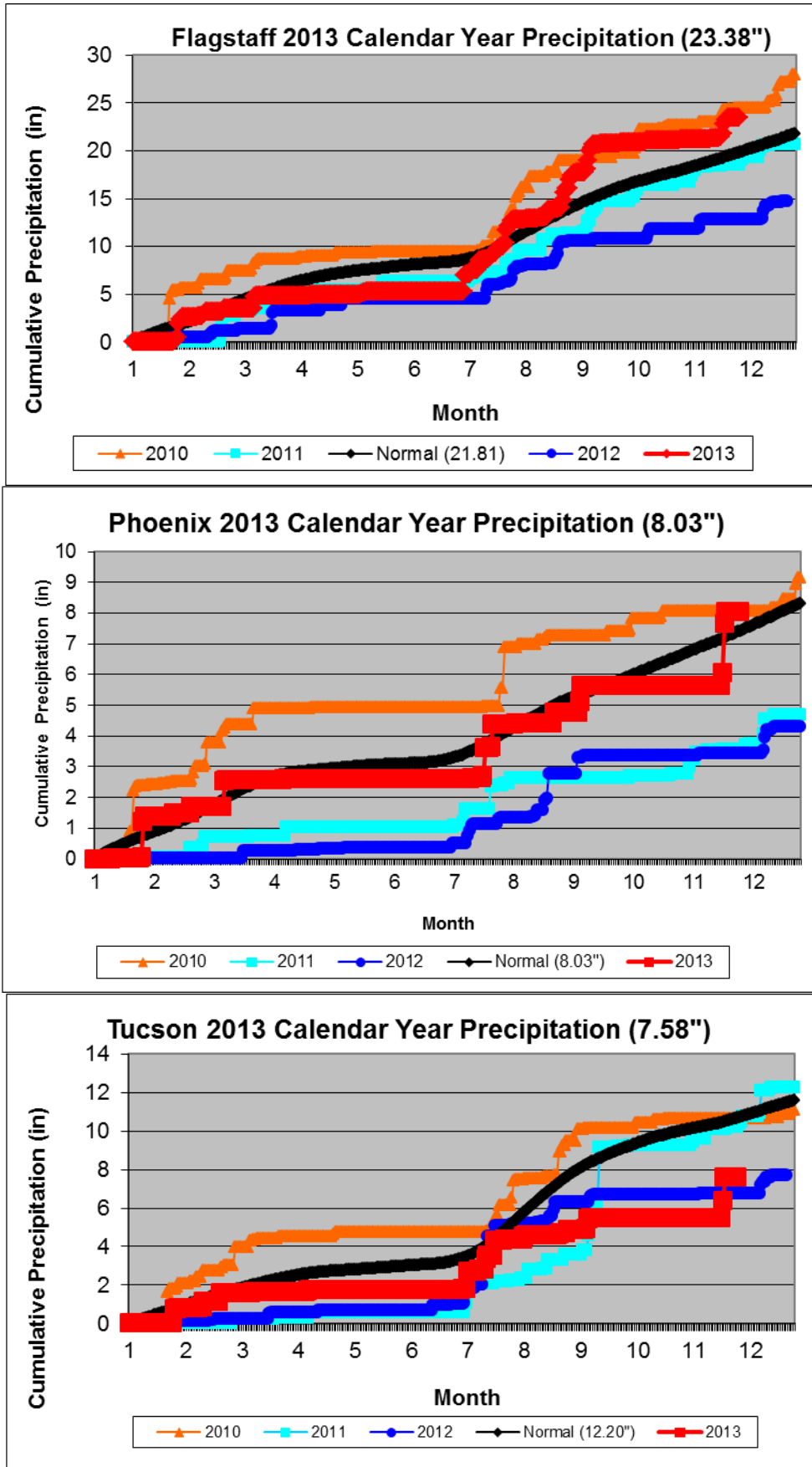


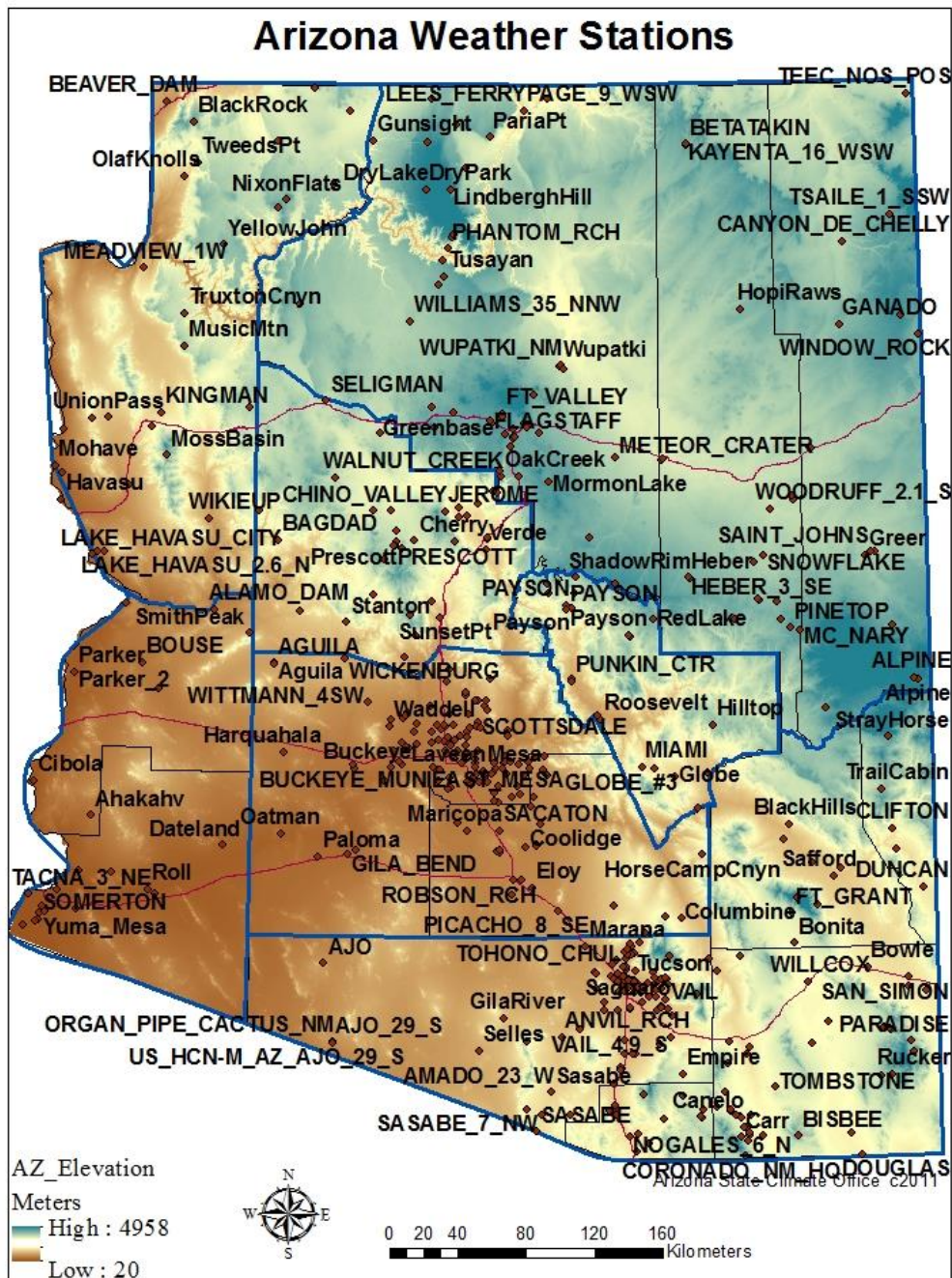
November Mean Precipitation Graphs – Flagstaff, Phoenix, and Tucson 1895-2013:



2013 Cumulative Precipitation Graphs – Flagstaff, Phoenix and Tucson:

After the monsoon, precipitation is well above average in Flagstaff, slightly above average in Phoenix, and well 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)