MONTHLY AIR QUALITY REPORT FOR SEPTEMBER 2010

AQI COLOR SCALE

GOOD	MODERATE	UNHEALTHY FOR SENSITIVE GROUPS	UNHEALTHY
0-50	51-100	101-150	151-200

Calendar of maximum AQI values & their corresponding color for September 2010*

*Preliminary data

SAMPLE POLLUTANT REPORTING BOX

1 (day of month)	O3	CO
	PM10	PM2.5

SUN			MON			TUES			WED			THU			FRI			SAT	
								1	71	09	2	64	10	3	104	14	4	58	09
									40	37		52	37		52	39		32	33
5	50	14	6	61	06	7	54	07	8	37	07	9	44	09	10	58	09	11	71	14
	34	35		38	33		36	25		42	25		41	24		56	31		41	36
12	67	15	13	58	11	14	58	13	15	47	11	16	48	13	17	54	13	18	87	17
	46	38		55	42		55	38		52	36		51	32		55	36		44	38
19	58	19	20	49	08	21	45	10	22	40	08	23	49	09	24	64	11	25	64	11
	43	35		51	23		51	34		44	27		42	24		45	33		37	30
26	48	09	27	80	07	28	84	08	29	109	08	30	109	08						
	35	33		42	33		52	31		45	32		52	37						

Calendar of High Pollution Advisories and Health Watches issued during September 2010

SUN	MON	TUE	WED	THU	FRI	SAT
			1	2 F	3 F	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30 F		

LEGEND

HIGH POLLUTION ADVISORIES
A = PM-10 High Pollution Advisory
B = PM-2.5 High Pollution Advisory
C = Ozone High Pollution Advisory

HEALTH WATCHES
D = PM-10 Health Watch
E = PM-2.5 Health Watch
F = Ozone Health Watch

Calendar of Meteorological Conditions observed in Metro Phoenix during September 2010

SUN	MON	TUE	WED	THU	FRI	SAT
			1	2	3 E	4
5	6	7	8 B	9 E	10 E	11
12	13	14	15	16	17	18 E
19	20 B	21 B	22 A B D	23	24	25
26 D	27 E	28 E	29	30		

LEGEND

ELECTROMETEORS
A = Thunderstorm

HYDROMETEORS
B = Rain/Drizzle/Hail/Snow
C = Fog

LITHOMETEORS
D = Blowing Dust
E = Haze (vsby <10SM)
F = Smoke

Non-Ozone Exceedance days during SEP 2010-

Total=	0	Date	Max AQI	Pollutant	Site/s

Non-Ozone Health Watches issued during SEP 2010-

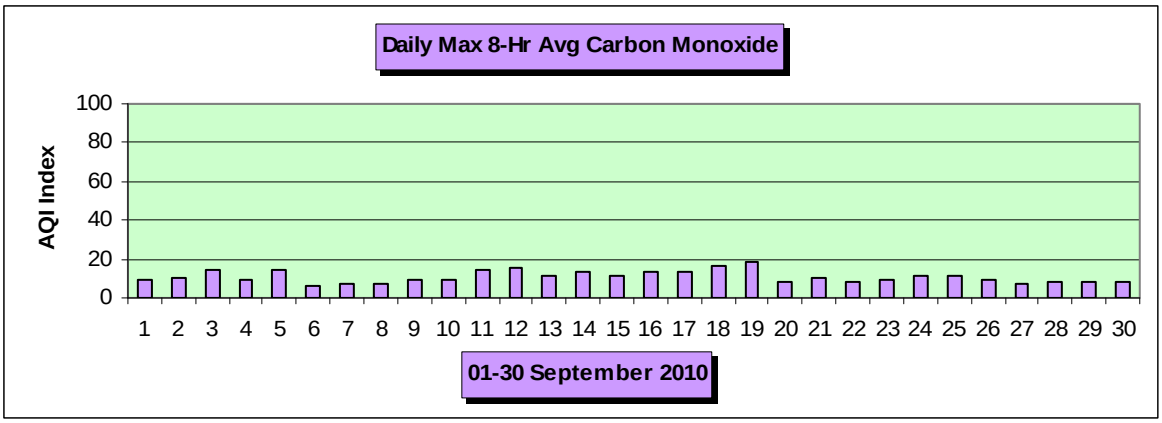
Total=	0	Date	Max AQI	Pollutant	Site/s

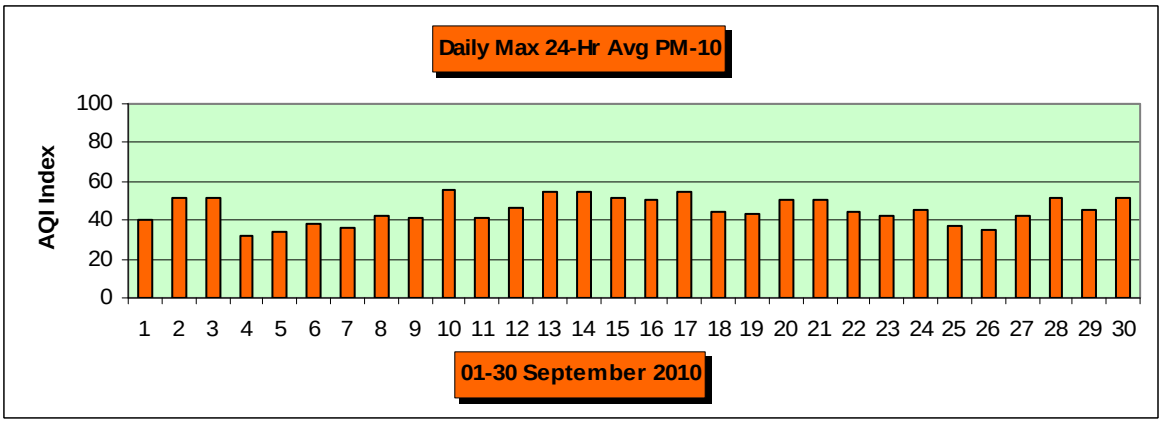
Non-Ozone High Pollution Advisories issued during SEP 2010-

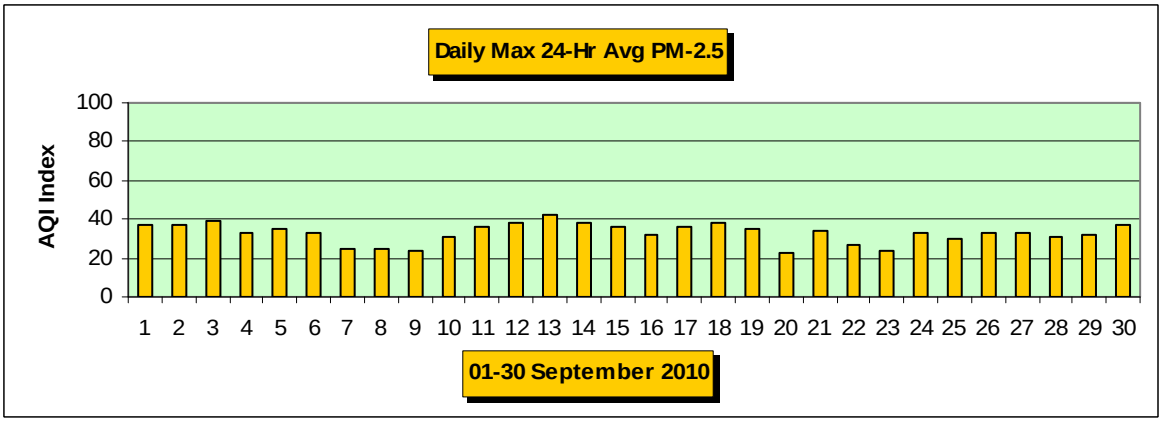
Total=	0	Date	Max AQI	Pollutant	Site/s

Concentration Recap:

Days in the Good category:	6
Days in the Moderate category:	21
Days in the Unhealthy for Sensitive Groups category:	3
Days in the Unhealthy category:	0
Total Forecast Days:	30







Narrative: The typical summer monsoon circulation pattern – that normally includes the presence of a sub-tropical high center near the Four Corners – was conspicuously absent during September, while the mid-latitude storm track or westerlies were unusually active for so early in the season. As an example, Figure 1 below shows that 500mb weather pattern on the 16th. As a result, Valley dew points dropped into the 30's by the 9th and the only precipitation reported during the first 19 days of the month was a trace on the 8th with the passage of a weak upper level trough. The unusually dry air and mostly light winds contributed to abnormally strong overnight inversion formation during the middle part of the month. Although 24-hour average particle pollutant levels remained in the good to low-moderate range of the Air Quality Index, this rather stagnant episode did lead to some high hourly PM readings as can be seen in Figure 2. However, from a weather and particle pollutant point of view, the 22nd was the most active day of the month. The approach of a another upper trough culminated in a surface frontal passage on that day and associated gradient winds that gusted up to 35 mph generated areas of blowing dust as can be seen in Figures 3 and 4. Hourly PM-10 (coarse particle) concentrations over 300ug/m3 were recorded at one monitoring site and 200+ug/m3 at four others. Coincidentally, smoke from a fire in Baja (Figure 5) drawn toward southern Arizona by the same southwesterly wind regime had no impacts on local pollution levels -Reith

Figure 1

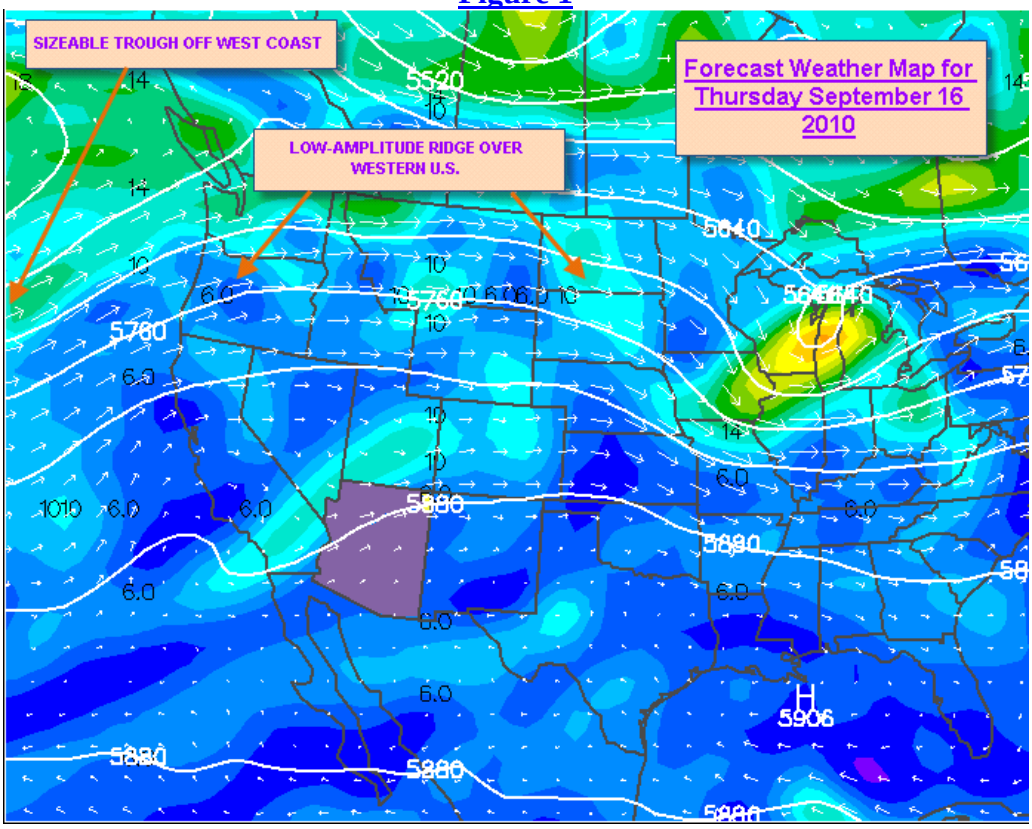


Figure 2

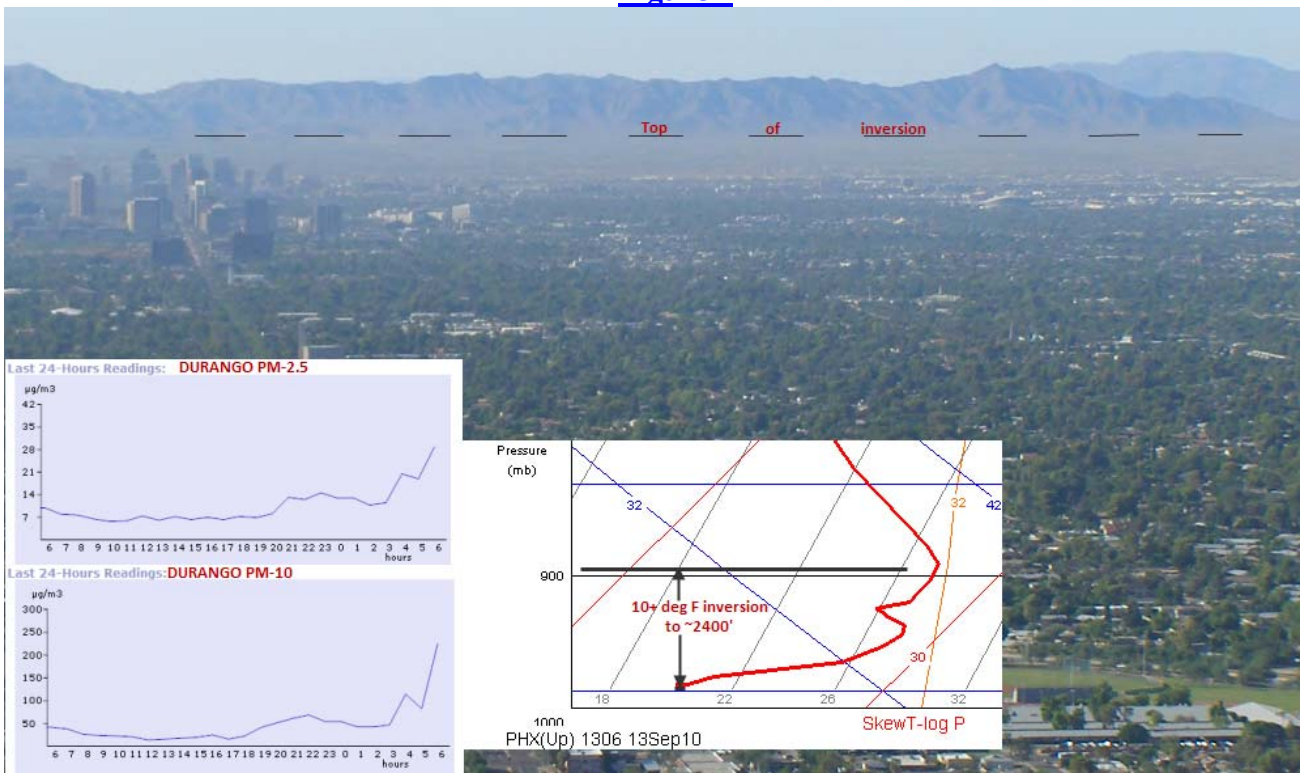
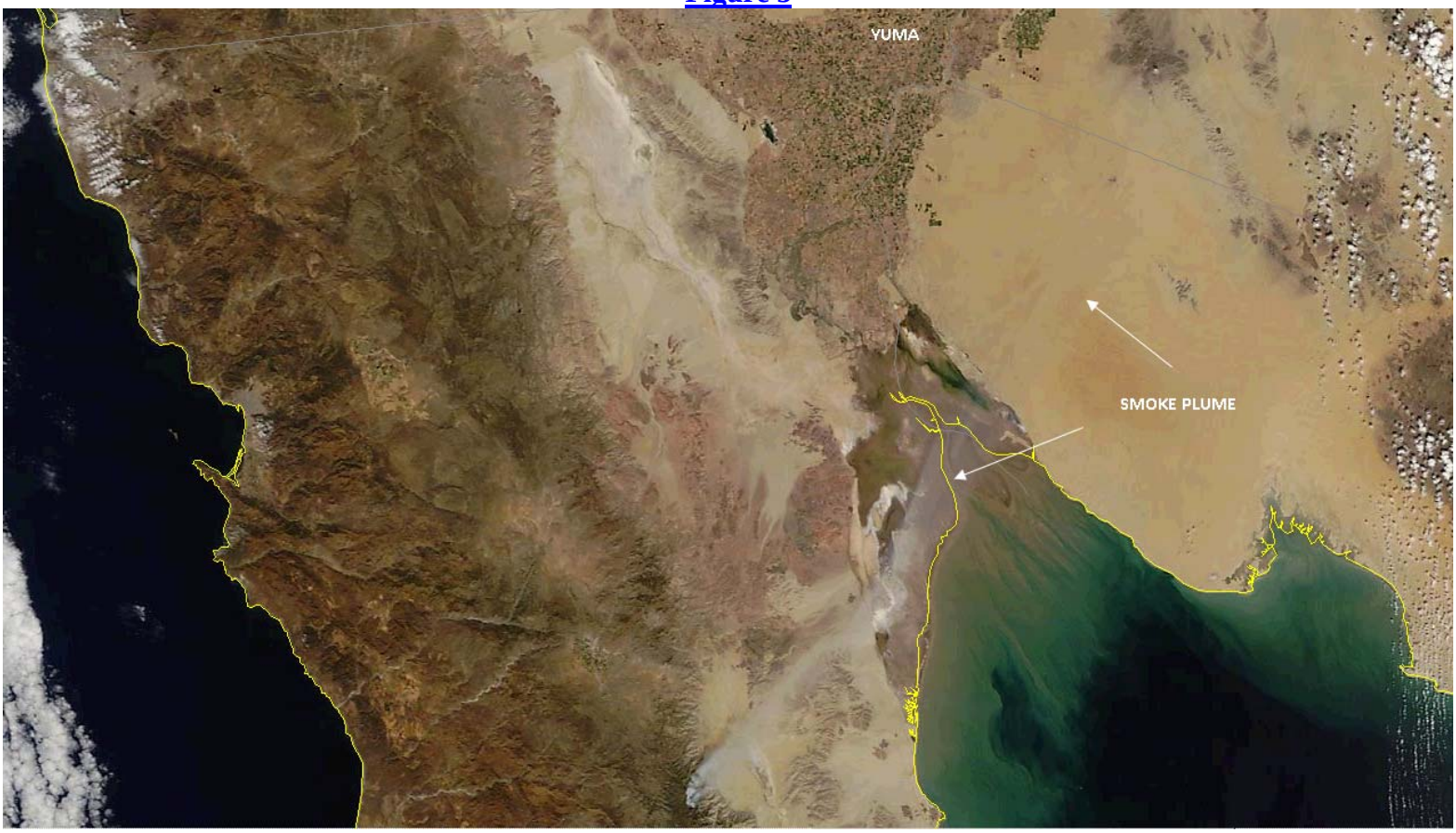


Figure 3

Figure 4

Figure 5



SEPTEMBER 22 2010

DETAILED OZONE SECTION

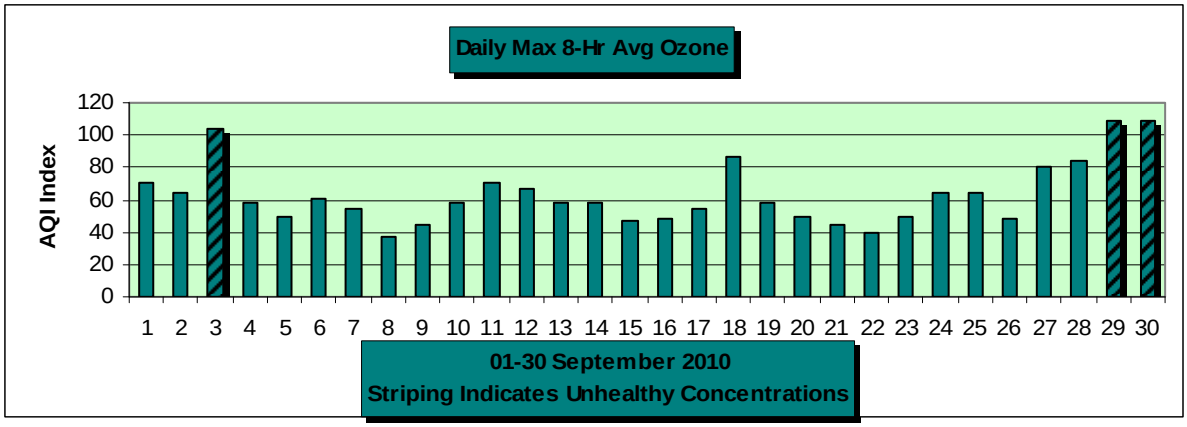
(Based on the 2008 EPA Revised 8-Hour Ozone Standard)

GOOD	MODERATE	UNHEALTHY FOR SENSITIVE GROUPS	UNHEALTHY
0-50	51-100	101-150	151-200

SUMMARY OF MAXIMUM 8-HR OZONE AQI VALUES FOR SEPTEMBER 2010*

*Preliminary data

SUN		MON		TUES		WED		THU		FRI		SAT	
						1	71	2	64	3	104	4	58
5	50	6	61	7	54	8	37	9	44	10	58	11	71
12	67	13	58	14	58	15	47	16	48	17	54	18	87
19	58	20	49	21	45	22	40	23	49	24	64	25	64
26	48	27	80	28	84	29	109	30	109				



8-hr Ozone exceedance days in SEP Total= 3

Date	Max ppb/AQI	Site/s
9/03	77/104	Glendale
9/29	79/109	Pinnacle Peak
9/30	79/109	Pinnacle Peak

Total number of exceedance days since APR 01: 10
Total number of exceedance sites since APR 01: 38

Ozone Health Watches in SEP: Total= 3
(Forecast max value 72-75 ppb)

Date	Max ppb/AQI	Site/s
9/02	64/64	Pinnacle Peak
9/03	77/104	Glendale
9/30	79/109	Pinnacle Peak

Ozone Health Watches since APR 01: Total= 32

High Pollution Advisories in SEP: Total= 0
(Forecast max value 76+ppb)

Date	Max ppb/AQI	Site/s

High Pollution Advisories since APR 01: Total= 5

Concentration Recap:

Days in the Good category:	10
Days in the Moderate category:	17
Days in the Unhealthy for Sensitive Groups category:	3
Days in the Unhealthy category:	0
Total Forecast Days:	30

Maximum 8-Hr value:

Date	Hour	Site	ppb/AQI	DOW
9/29	1200	Pinnacle Peak	79/109	Wed
9/30	1200	Pinnacle Peak	79/109	Thu

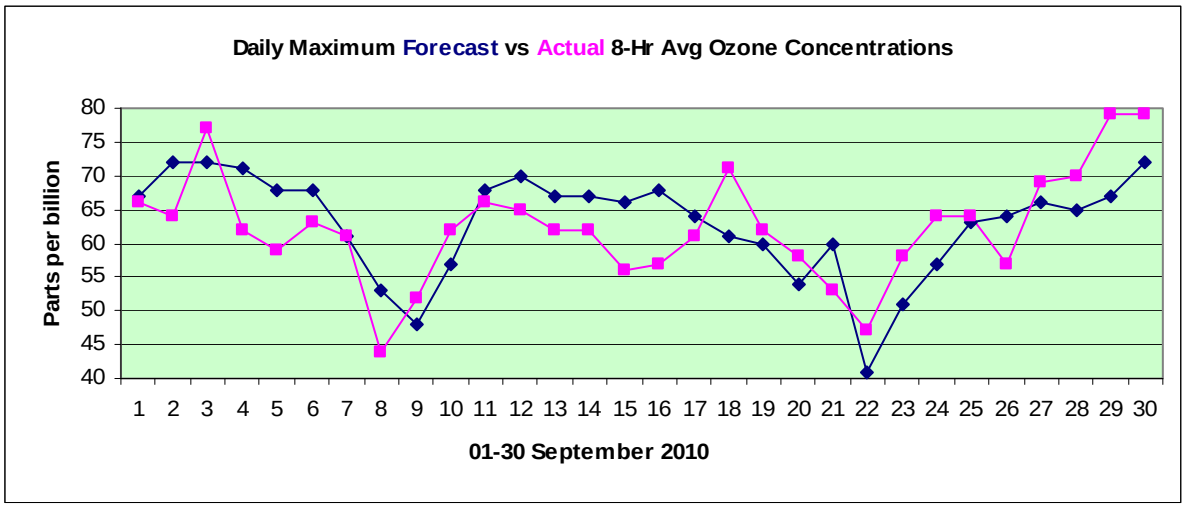
Maximum 1-Hr value:

Date	Hour	Site	ppb/AQI	DOW
9/29	1600	Pinnacle Peak	96/80	Wed

Average daily max 8-Hr concentration (ppb):	62.3
Deviation from the 1996-2009 average (ppb):	**+0.3**

SEP Climatology: (Period 1996-2007 using 1997 85ppb standard & 2008-2009 using 76ppb standard)	Average number of 8-Hr exceedance days:	0.3
	Maximum number of 8-Hr exceedance days:	2 in 1997 and 1999
	Minimum number of 8-Hr exceedance days:	0 all other years
	Average daily max 8-Hr concentration (ppb):	62.0
	Record high max 8-Hr concentration (ppb):	91on the 4th, 1997
	Record low max 8-Hr concentration (ppb):	36 on the 14th, 2009

Forecast Verification:	# of days maximum concentrations were over-forecast:	15
	# of days maximum concentrations were under-forecast:	14
	# of days maximum concentrations were correctly forecast:	1
	Sep average forecast accuracy (ppb):	+/-5.7
	Sep average forecast bias (ppb):	+0.5



Narrative: Phoenix metro area ground-level ozone levels made a strong and nearly unprecedented return during the month of September. Especially remarkable were the exceedances that occurred on the 29th and 30th. Between 1996 and 2009 local 8-hour ozone levels had reached the 79 parts per billion level on only 10 occasions during the month of September, and the latest day of the month during that period was on the 27th in 1999 and 2003. Also, the three exceedances this month were the most for September during the past 15 years; 12 years during the past 14 having zero exceedances. In addition, the max hourly concentrations of 96 and 94 parts per billion on the 29th and 30th, respectively, were some of the highest of the entire season. Weather conditions that could have contributed to the exceedances on those two days included mostly sunny skies, near-to or record high afternoon temperatures in the 104 – 107 deg F range, a strong upper level ridge overhead, and mostly light or calm winds each day. These conditions were not that much different from the two days leading up to the spike or the day following it however, and the meteorological situation alone does not appear to the explain the 20% jump in the max hourly ozone concentration on the 29th vs. the 28th. This leaves much room for speculation, but one explanation may be an increase in or transport of additional ozone pre-cursor emissions (NOX & VOC) from an unidentified source. Whatever the cause, it made for an unusual end to the 2010 ozone season in the metro area, for which Figures 1 thru 3 below show summary data. -Reith

Figure 1

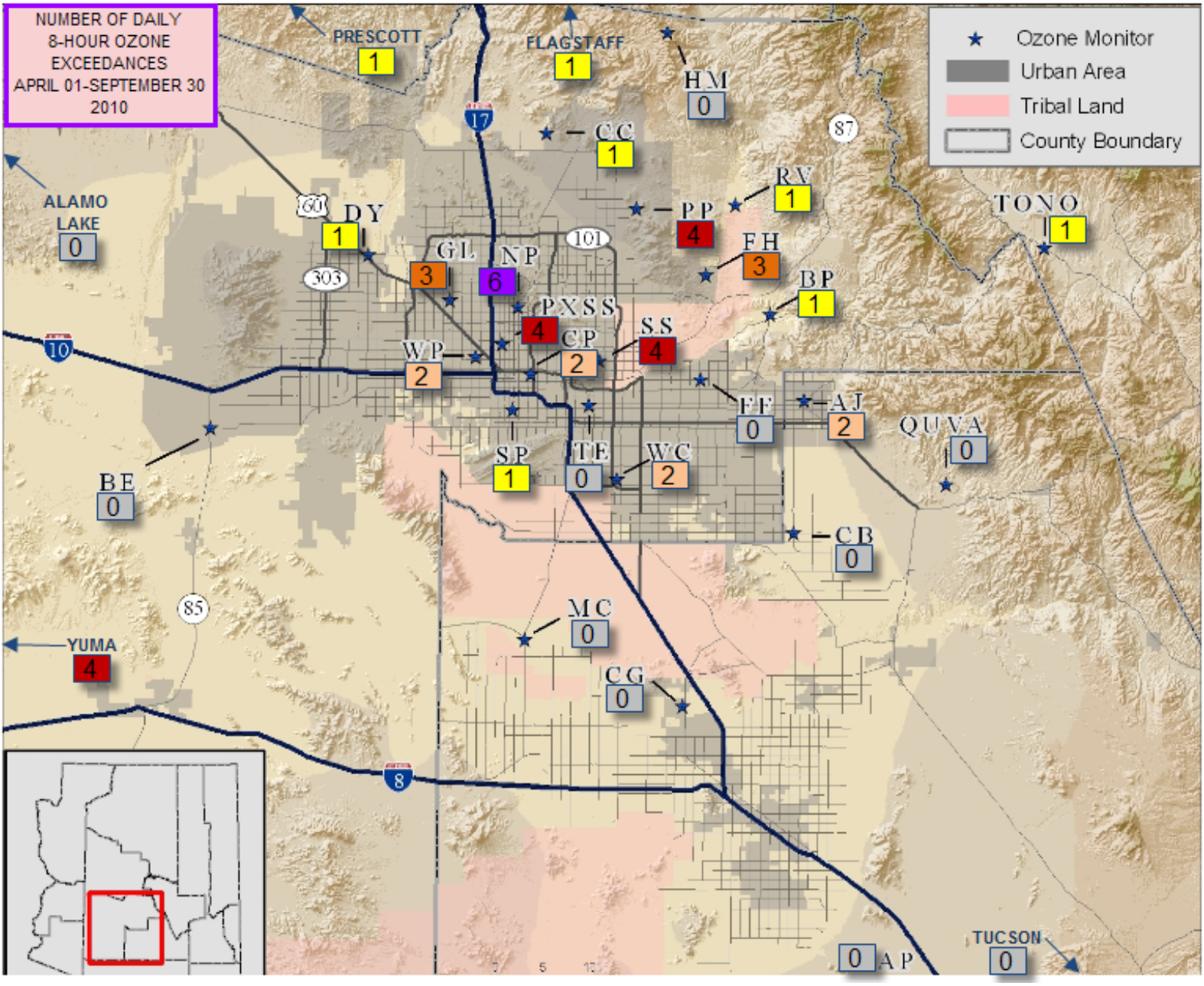
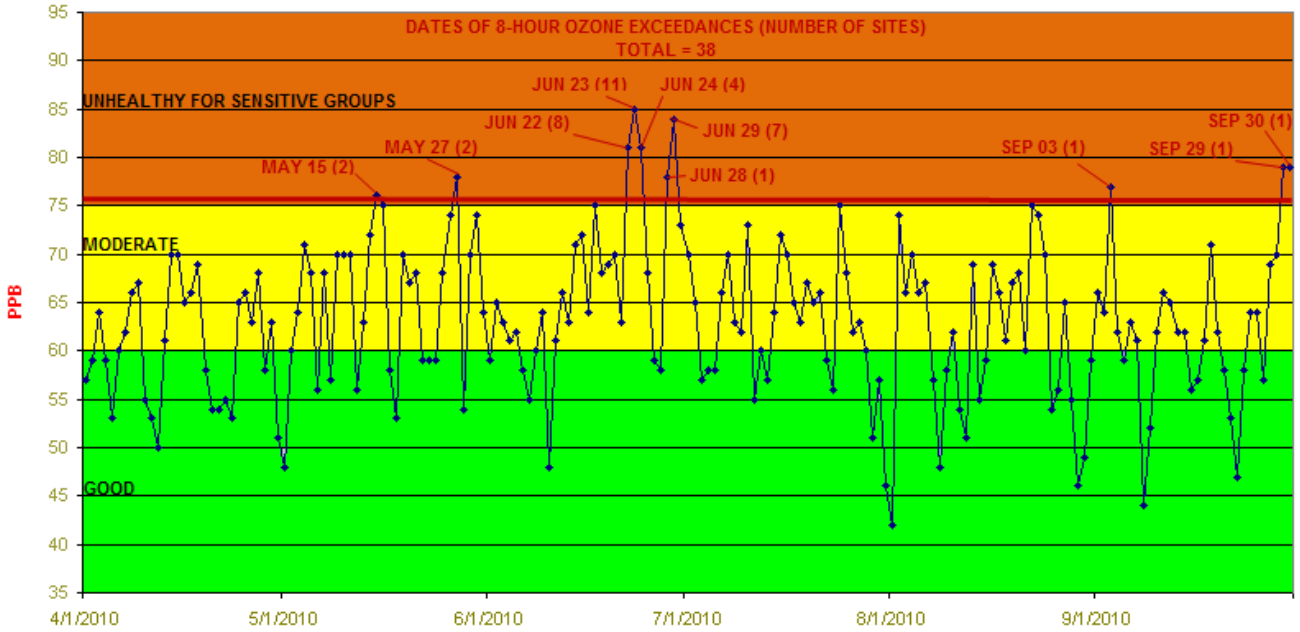

NUMBER OF DAILY
8-HOUR OZONE
EXCEEDANCES
APRIL 01-SEPTEMBER 30
2010
Ozone Monitor
Urban Area
Tribal Land
County Boundary
PRESCOTT
1
FLAGSTAFF
1
HM
0
CC
1
RV
1
PP
4
TONO
1
ALAMO
LAKE
0
DY
1
GL
3
NP
6
FH
3
BP
1
PXSS
4
SS
4
CP
2
WP
2
FF
0
AJ
2
QUVA
0
SP
1
TE
0
WC
2
BE
0
CB
0
MC
0
YUMA
4
CG
0
0
AP
TUCSON
0
17
87
60
101
303
10
85
8

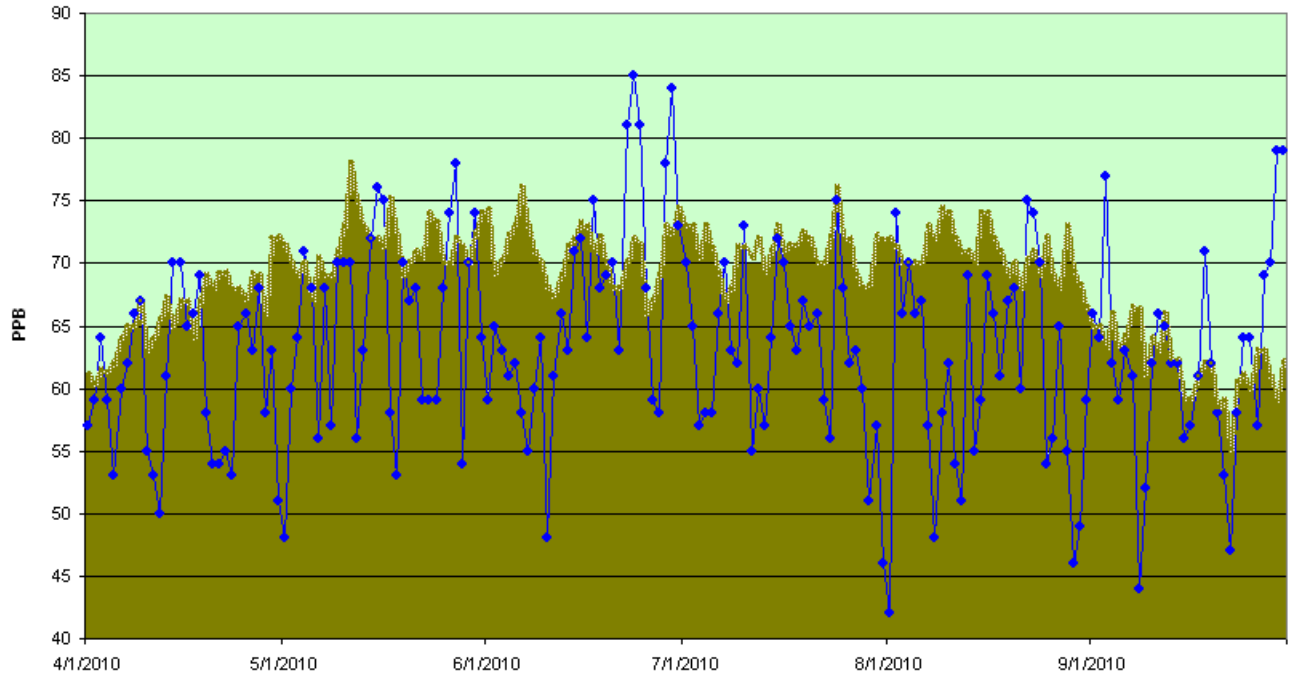
Figure 2

Daily Max Phoenix Metro 8-Hr Avg Ozone Levels



01 Apr - 30 Sep 2010

Figure 3

Daily Max Phoenix Metro 8-Hr Avg Ozone Levels

2010 Daily Peak Concentrations vs 1996-2009 Daily Average Peak Concentrations