



MONTHLY AIR QUALITY REPORT FOR
OCTOBER 2011

AOI COLOR SCALE

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

Calendar of maximum AQI values & their corresponding color for October 2011*

*Preliminary data

SAMPLE POLLUTANT REPORTING BOX

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

SUN		MON		TUES		WED		THU		FRI		SAT	
												1	48 07 48 29
2	64 07 41 32	3	42 08 39 32	4	25 03 149 38	5	40 07 47 40	6	41 03 46 25	7	42 03 32 24	8	44 07 36 35
9	39 10 39 39	10	48 11 48 37	11	54 16 51 35	12	45 10 53 36	13	47 13 58 44	14	54 18 60 52	15	49 20 60 58
16	51 20 52 45	17	49 14 53 42	18	45 11 59 42	19	48 15 68 49	20	49 19 64 36	21	42 10 60 32	22	44 14 68 40
23	50 20 59 37	24	40 19 67 44	25	35 09 76 43	26	41 06 46 32	27	41 07 33 24	28	42 14 51 36	29	44 16 58 44
30	45 20 56 40	31	41 17 62 45										

Calendar of High Pollution Advisories and Health Watches issued during October 2011

SUN			MON			TUE			WED			THU			FRI			SAT		
																		1		
2		3			4	D			5			6	D		7			8		
9		10			11				12			13			14			15		
16		17			18				19			20			21			22		
23		24			25				26			27			28			29		
30		31																		

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 October 2011

SUN			MON			TUE			WED			THU			FRI			SAT		
																		1		
2		3			4	A B D			5		E	6	D B		7			8		
9		10			11				12		E	13		E	14		E	15		
16		17			18			E	19		E	20			21		E	22		E
23		24		B	25	A B D			26	A B D		27			28		E	29		
30		31		E																

LEGEND

ELECTROMETEORS

- A** = Thunderstorm

HYDROMETEORS

- B** = Rain/Drizzle/Hail/Snow
- C** = Fog

LITHOMETEORS

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

Exceedance days during OCT 2011-

<u>Total=</u>	<u>Date</u>	<u>Max AQI</u>	<u>Pollutant</u>	<u>Site/s</u>
1	10/04	149	PM-10	West Chandler
		102	PM-10	Higley

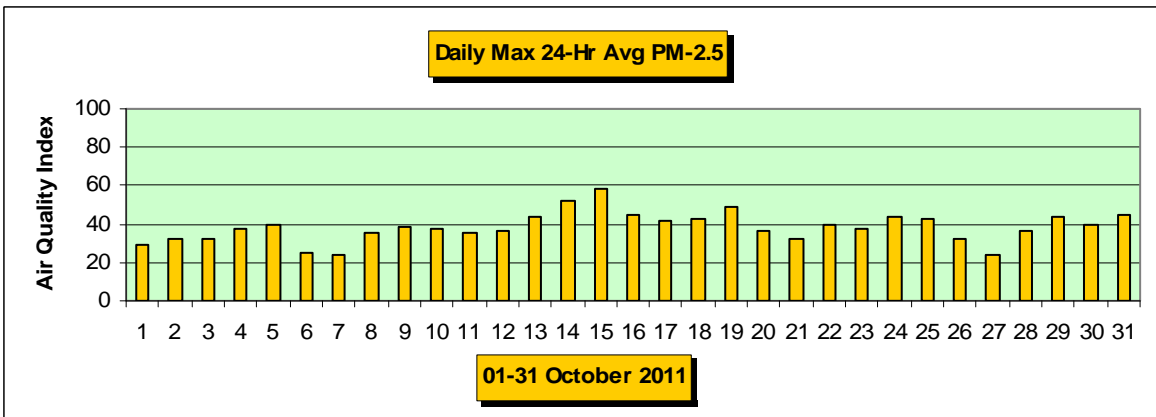
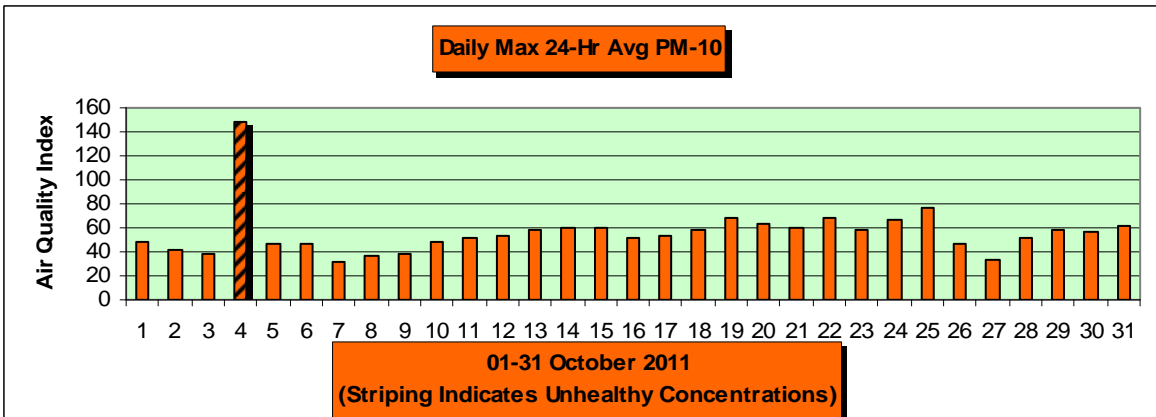
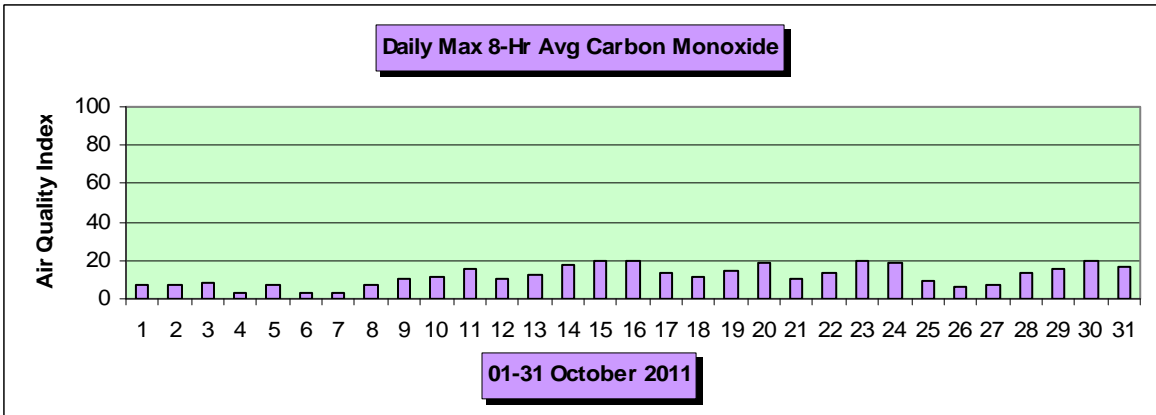
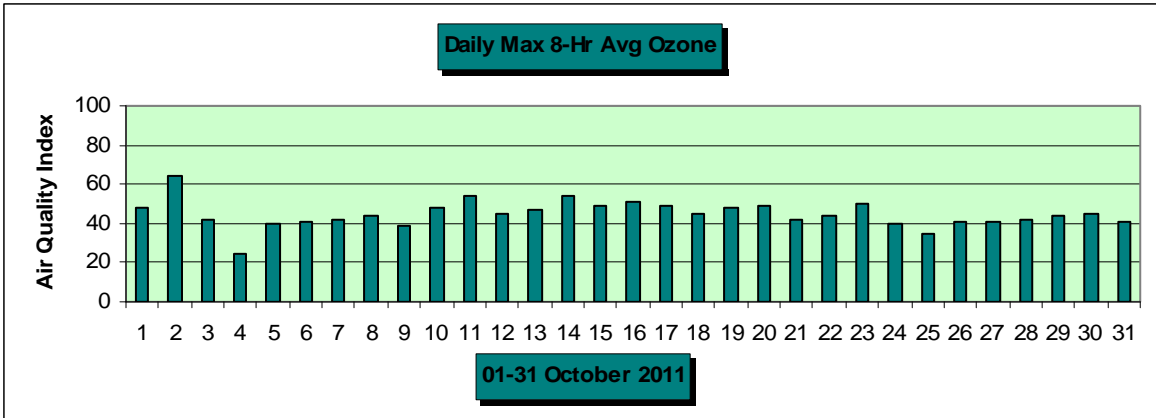
Health Watches issued during OCT 2011-

<u>Total=</u>	<u>Date</u>	<u>Max AQI</u>	<u>Pollutant</u>	<u>Site/s</u>
2	10/04	149	PM-10	West Chandler
	10/06	46	PM-10	Durango

High Pollution Advisories issued during OCT 2011-

<u>Total=</u>	<u>Date</u>	<u>Max AQI</u>	<u>Pollutant</u>	<u>Site/s</u>
0				

<u>Concentration Recap:</u>	Days in the Good category:	10
	Days in the Moderate category:	20
	Days in the Unhealthy for Sensitive Groups category:	1
	Days in the Unhealthy category:	<u>0</u>
	Total Forecast Days:	31



Narrative: Unofficially, the month of October begins the “cool-season” for air quality forecasting in the Phoenix metro area with the emphasis switching from ozone to coarse and fine particulate matter (PM-10 and PM-2.5). Although the amount of ozone precursor emissions remains roughly the same, due to lower sun angles, shorter days, and cooler daytime temperatures local ozone levels typically drop off dramatically and October 2011 was no exception. Unfortunately, Valley air quality during the month was still far from ideal due to coarse particle (PM-10) pollution. Rainfall was infrequent and sparse during the month and on the 4th an upper level trough in the mid-latitude storm track approached and moved over the metro area. This system produced gusty gradient winds by the afternoon along with a few thunderstorms that also produced strong outflow winds. As a result, wind gusts up to 54 mph were registered at local airports between noon and 8:00 p.m. and dense blowing dust generated by the winds lowered visibilities to as low as one mile. Figures 1-5 below are images from the local VISNET camera array show the visual impacts of the blowing dust to good effect:

Figure 1



[Figure 2](#)



[Figure 3](#)



[Figure 4](#)



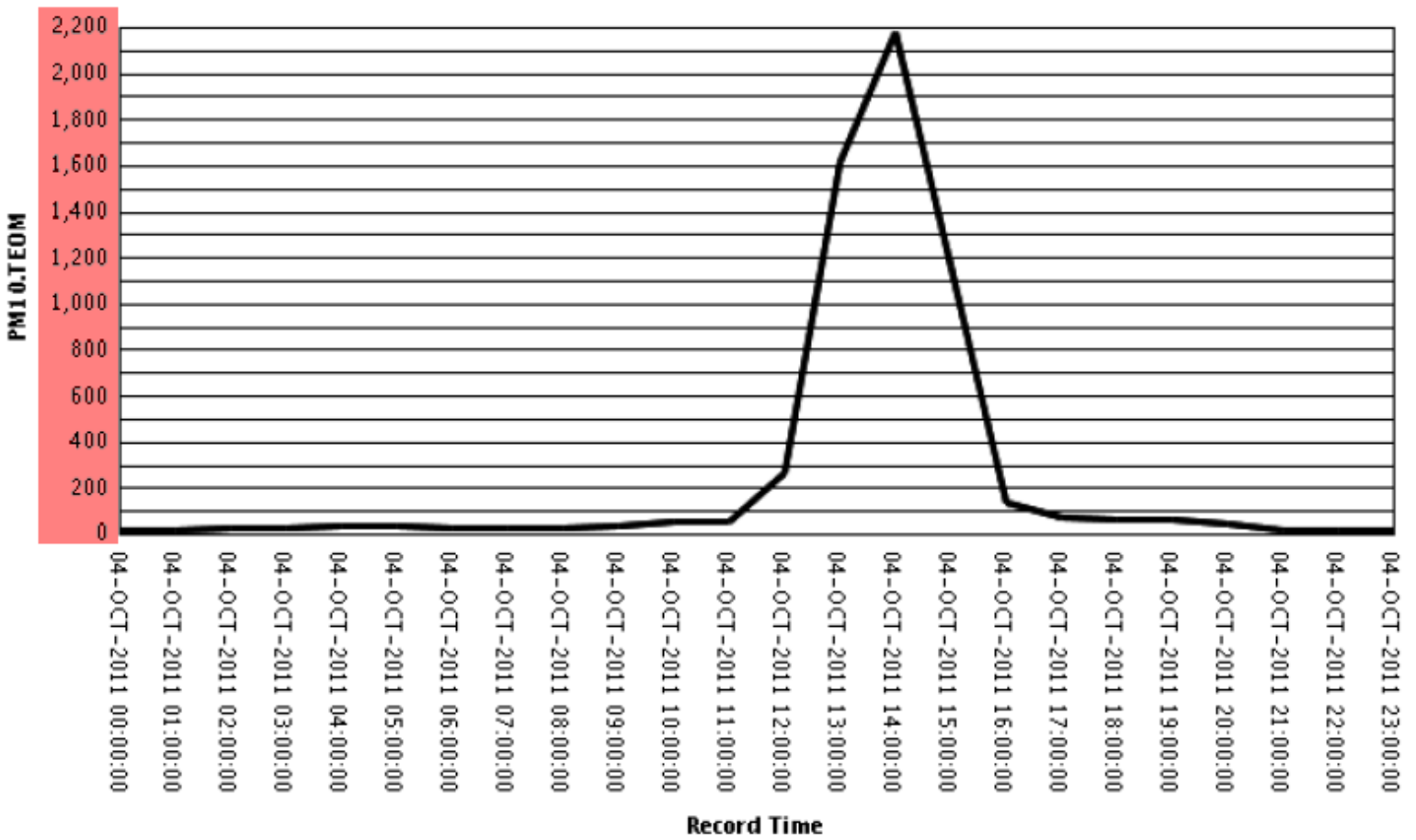
[Figure 5](#)



Another consequence of the blowing dust event was a pair of PM-10 (coarse particle) exceedances at the West Chandler and Higley monitoring sites. [Figure 6](#) below shows the PM-10 time series for the West Chandler site for October 4 that includes a max hourly concentration of 2.181.8ug/m3 at 2:00 p.m.

[Figure 6](#)

Name: WEST CHANDLER



Between the 11th and the 23rd of the month the synoptic weather pattern over Arizona featured a strong ridge aloft that was either overhead or situated nearby. The combination of warm air aloft and overnight surface-based radiation inversion formation (5.0-7.3 deg C each morning from the 12th thru the 24th) resulted in periods of stagnant conditions – mainly during the morning hours. These conditions, along with dry soils and fugitive dust emissions, contributed to elevated PM-10 levels each day thru the period. The illustration below ([Figure 7](#)) for October 24 demonstrates the stagnation situation that was typical during the period. Fortunately, the approach and arrival of an upper level trough and surface cold front that occurred during the 24th and 25th of the month brought a significant improvement in dispersion as well as some light but much-needed rainfall. Unfortunately, downdrafts produced by the accompanying thunderstorm activity generated wind gusts of up to 49 mph on the 25th and another spike in PM-10 levels. Another strong ridge arrived overhead on the 29th and stagnant conditions prevailed thru the end of the month. -Reith

Figure 7

