



MONTHLY AIR QUALITY REPORT FOR
OCTOBER 2012

AOI COLOR SCALE

GOOD 0-50	MODERATE 51-100	UNHEALTHY FOR SENSITIVE GROUPS 101-150	UNHEALTHY 151-200
	VERY UNHEALTHY 201-300	HAZARDOUS 301-500	

Calendar of maximum AQI values & their corresponding color for October 2012*

*Preliminary data

SAMPLE POLLUTANT REPORTING BOX

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

	SUN	MON	TUES	WED	THU	FRI	SAT
		1 51 08 76 46	2 74 09 58 40	3 77 09 59 46	4 58 09 58 51	5 47 10 59 56	6 51 16 63 52
7	58 13 54 53	8 48 13 54 44	9 42 08 50 49	10 41 09 44 44	11 32 06 55 30	12 37 05 26 24	13 42 08 31 32
14	42 13 33 37	15 51 15 59 44	16 50 13 55 36	17 54 11 59 38	18 47 13 56 42	19 47 11 56 42	20 50 14 51 41
21	31 14 43 31	22 34 07 40 28	23 40 09 40 35	24 50 10 54 50	25 46 09 50 36	26 45 10 67 30	27 44 16 56 51
28	51 19 53 52	29 50 20 62 60	30 50 19 72 59	31 50 19 68 56			

Calendar of High Pollution Advisories and Health Watches issued during October 2012

SUN	MON	TUE	WED	THU	FRI	SAT
	1	2	3	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	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 2012

SUN	MON	TUE	WED	THU	FRI	SAT
	1	2	3	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	31			

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 2012-

Total= 0 Date Max AQI Pollutant Site/s

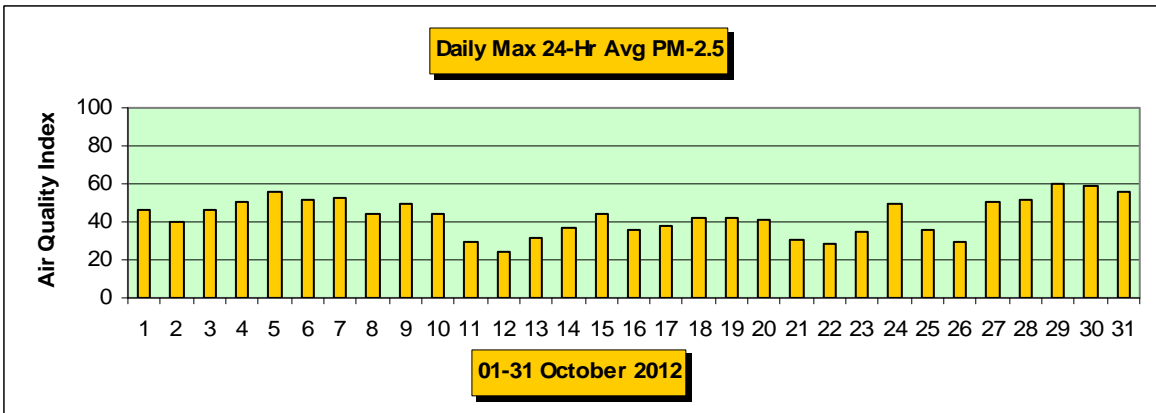
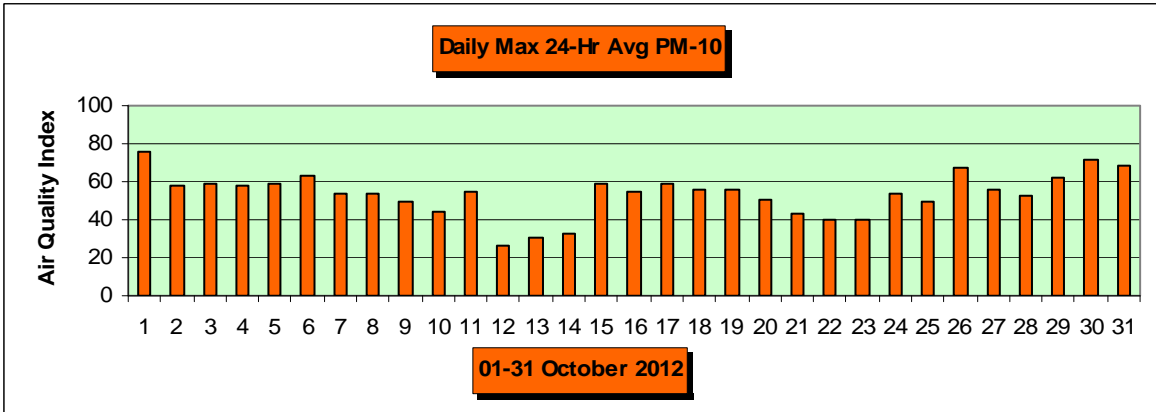
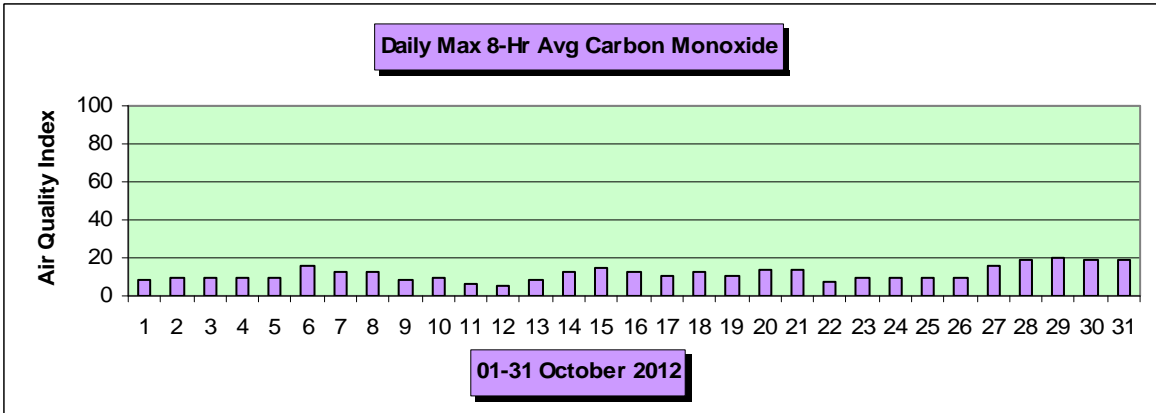
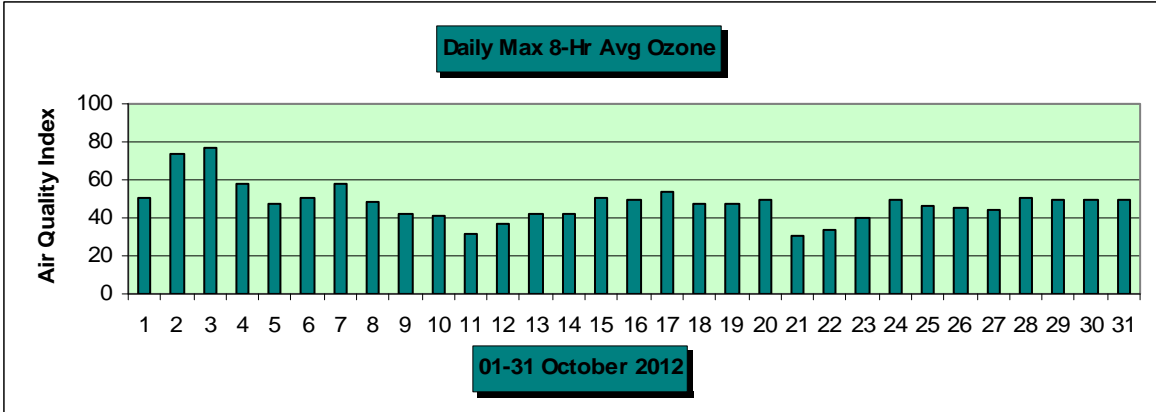
Health Watches issued during OCT 2012-

Total= 1 Date Max AQI Pollutant Site/s
10/11 55 PM-10 Durango

High Pollution Advisories issued during OCT 2012-

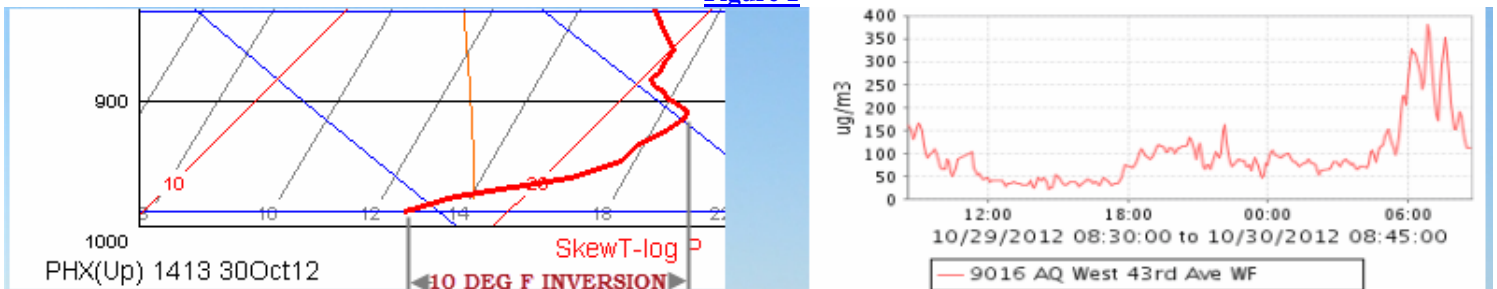
Total= 0 Date Max AQI Pollutant Site/s

Concentration Recap: Days in the **Good** category: 9
Days in the **Moderate** category: 21
Days in the **Unhealthy for Sensitive Groups** category: 0
Days in the **Unhealthy** category: 0
Total Forecast Days: 31



Narrative: For the Phoenix metro area the month of October 2012 was rather uneventful from both a meteorological and air pollution point of view – especially in comparison to previous months. Other than a rather weak upper level trough and surface cold frontal passage on the 11th and 12th, the synoptic weather pattern was characterized by an upper level ridge overhead or nearby. 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 pre-cursors (primary pollutants) are estimated to remain unchanged from season to season, the process of ozone (a secondary pollutant) production decreases dramatically due to the lower sun angle, shorter day-length, and cooler temperatures. During October 2012 highest local ozone levels were mostly in the good range of the Air Quality Index from the 5th of the month onward. Unfortunately, particle pollution levels were in the good range on only nine days during the month and the processes that contribute to the increase in PM-10 (coarse) and PM-2.5 (fine) concentrations are easy to identify. The aforementioned upper level ridge is the principal feature in that it results in downward moving and warming air aloft with an inversion a common development. This weather pattern is often also accompanied by light or calm surface winds, dry air, and minimal cloud cover. These conditions favor the formation of overnight surface-based radiation inversions that can become quite strong. Ultimately, the air mass over the Valley becomes stagnant and the resulting shallow mixing depths and unfavorable dispersion take their toll on air quality as trapped and re-circulated particle pollutant concentrations increase. An example of such a scenario is illustrated in [Figure 1](#) which shows the impact of a low-level inversion on coarse particle levels at the West Forty Third monitoring site and on local visibilities during the morning of October 30. -Reith

Figure 1



Trapping Inversion + Elevated Particle Levels = Valley Brown Cloud

