



Janet Napolitano, Governor
 Stephen A. Owens, ADEQ Director

MONTHLY AIR QUALITY REPORT FOR
SEP 2005

AQI COLOR SCALE

GOOD 0-50	MODERATE 51-100	UNHEALTHY FOR SENSITIVE GROUPS 101-150	UNHEALTHY 151-200
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Calendar of maximum AQI values & their corresponding color for Sep 2005*

*Preliminary data

SAMPLE POLLUTANT REPORTING BOX

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

SUN			MON			TUES			WED			THU			FRI			SAT		
												1	45	15	2	54	14	3	48	11
													71	33		50	27		35	33
4	87	10	5	48	08	6	49	15	7	48	24	8	51	09	9	39	11	10	38	11
	22	33		39	31		61	36		71	31		51	30		55	31		47	23
11	44	09	12	51	15	13	46	13	14	64	18	15	51	22	16	48	23	17	72	28
	25	16		59	22		53	23		62	25		68	29		71	33		62	37
18	54	38	19	42	27	20	46	25	21	47	15	22	47	18	23	45	24	24	69	24
	47	34		84	39		68	34		64	28		63	22		71	38		60	34
25	46	34	26	41	30	27	43	26	28	49	18	29	56	19	30	64	24			
	54	28		82	41		97	44		74	41		88	33		84	42			

PM Exceedance days during SEP 2005-

Total= 0 Date Max AQI Pollutant Site/s

PM Health Watches issued during SEP 2005-

Total= 2 Date Max AQI Pollutant Site/s
9/27 97 PM-10 West Forty Third
9/28 74 PM-10 West Forty Third

PM High Pollution Advisories issued during SEP 2005-

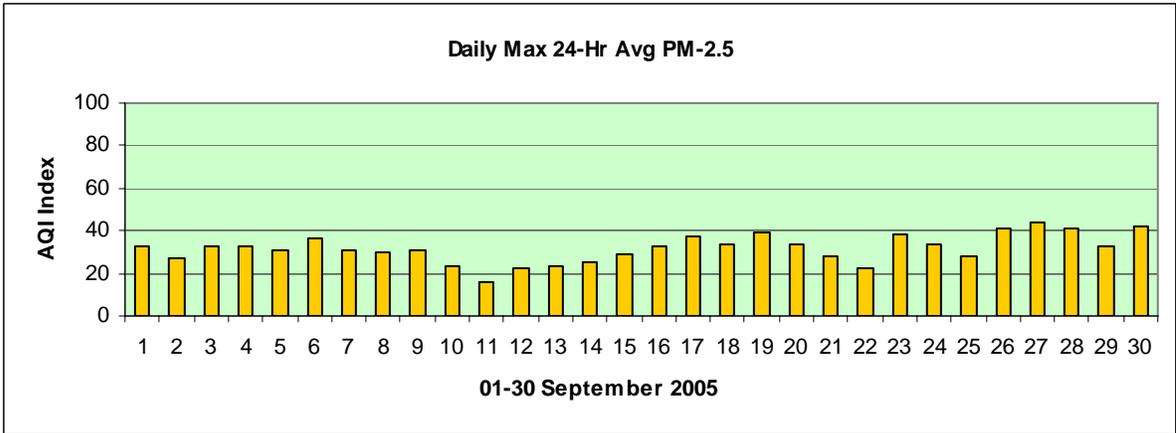
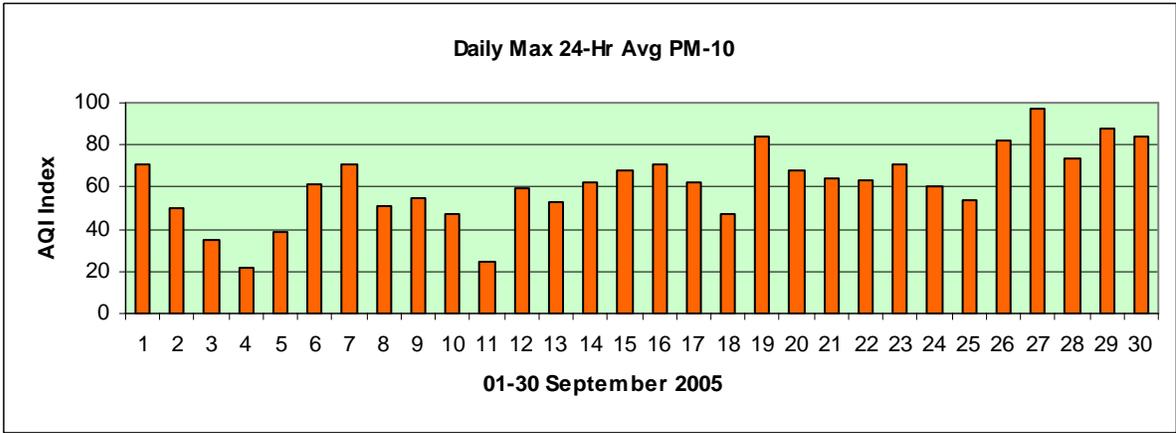
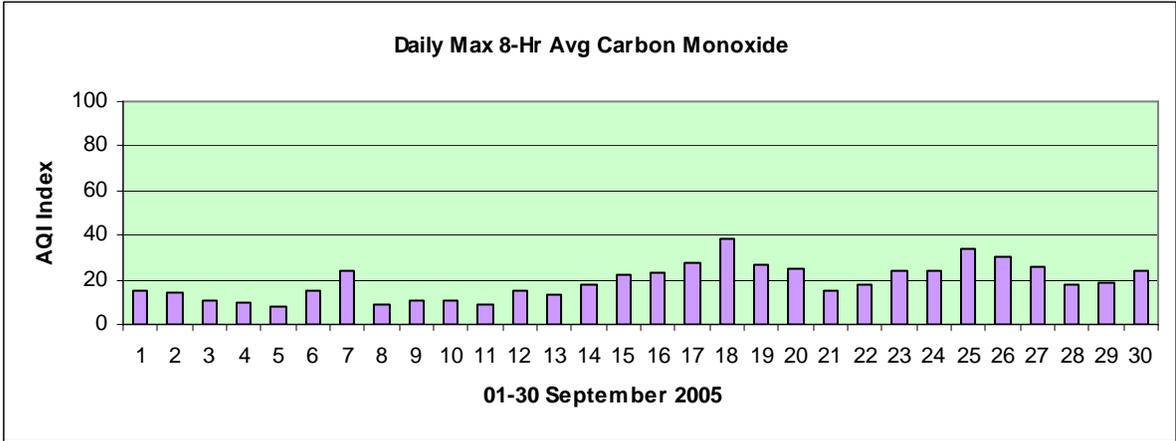
Total= 0 Date Max AQI Pollutant Site/s

Narrative:

In the Phoenix area September is normally the month of transition during which coarse particles (PM-10) replaces ozone (O3) as the air pollutant of concern, and the summer monsoon is replaced by the mid-latitude storm track as the main weather producer (the summer monsoon officially ended on the 10th). The normally cooler nocturnal temperatures also contribute to higher concentrations of carbon monoxide. The graph below shows the average and maximum monthly AQI comparison of four air pollutants for August and September 2005 in the Phoenix monitoring network:

Pollutant	Ozone (O3)	Carbon Monoxide	PM-10	PM-2.5
Average Aug AQI	60	11	42	31
Average Sep AQI	51	19	61	32
TREND	-	+	+	none
Highest Aug AQI	106	15	68	42
Highest Sep AQI	87	38	97	42
TREND	-	+	+	none

This graph clearly illustrates that ozone levels decreased in September while those of PM-10 and carbon monoxide increased. Some of the same factors that influence ozone production when they peak – day length, sun angle, and maximum temperature – play a similar role in local PM-10 levels when the factors decrease. Indeed, it is the drop in solar insolation associated with the changing season that, depending on the synoptic weather pattern, can cause strong inversions to form over the Phoenix basin. In addition, when the mid-latitude storm track migrates south, it is common for the ridge position within the storm track to be situated over Arizona at times. On many occasions this results in a relatively light wind regime and strong warming aloft – a potent recipe for stagnation over the valleys of the lower deserts. Although concentrations of carbon monoxide and PM-2.5 were in the good range of the Air Quality Index all month, those of PM-10 reached the 80-100 AQI range on five occasions during the last 12 days of the month. On September 9 the first significant frontal passage of the season occurred and ended the summer monsoon by bringing in significantly drier air – average dew pts fell from between 50 and 60 deg F into the 30's and 40's. This in turn allowed the nighttime temperature to drop from the 70's and 80's prior to the frontal passage into the 50's and 60's from the 10th thru the 19th following the frontal passage. The formation of the *Valley Brown Cloud*, the local term for suspended particulate matter during the cool season, rapidly followed with visibility as low as five miles the morning of the 19th, a day on which the PM-10 AQI reached 84. The highest AQI reading of 97 that occurred on the 27th is believed to be at least partially attributable to smoke from a local hay fire that occurred under stagnant conditions and prompted two PM-10 Health Watches. -Reith



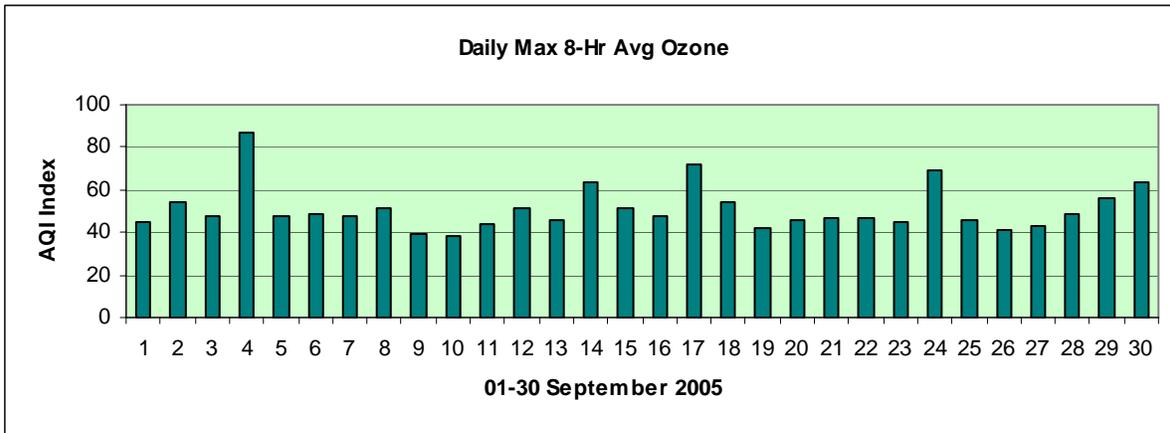
DETAILED OZONE SECTION

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

SUMMARY OF MAXIMUM 8-HR OZONE AQI VALUES FOR SEP 2005*

*Preliminary data

SUN		MON		TUES		WED		THU		FRI		SAT	
								1	45	2	54	3	48
4	87	5	48	6	49	7	48	8	51	9	39	10	38
11	44	12	51	13	46	14	64	15	51	16	48	17	72
18	54	19	42	20	46	21	47	22	47	23	45	24	69
25	46	26	41	27	43	28	49	29	56	30	64		



8-hr Ozone exceedance days in SEP: Total= 0 Date Max ppb/AQI Site/s

Total number of exceedance days since APR 01: 13

Total number of exceedance sites since APR 01: 30

Ozone Health Watches in SEP: Total= 1 Date Max ppb/AQI Site/s
(Forecast max value 80-84 ppb) 9/07 62/48 North Phoenix

Ozone Health Watches since APR 01: Total= 24

High Pollution Advisories in SEP: Total= 0
(Forecast max value 85+ppb)

High Pollution Advisories since APR 01: Total= 9

Concentration Recap: Days in the **Good** AQI category: 19
Days in the **Moderate** AQI category: 11
Days in the **Unhealthy for Sensitive Groups** AQI category: 0
Days in the **Unhealthy** AQI category: 0
Total Forecast Days: 30

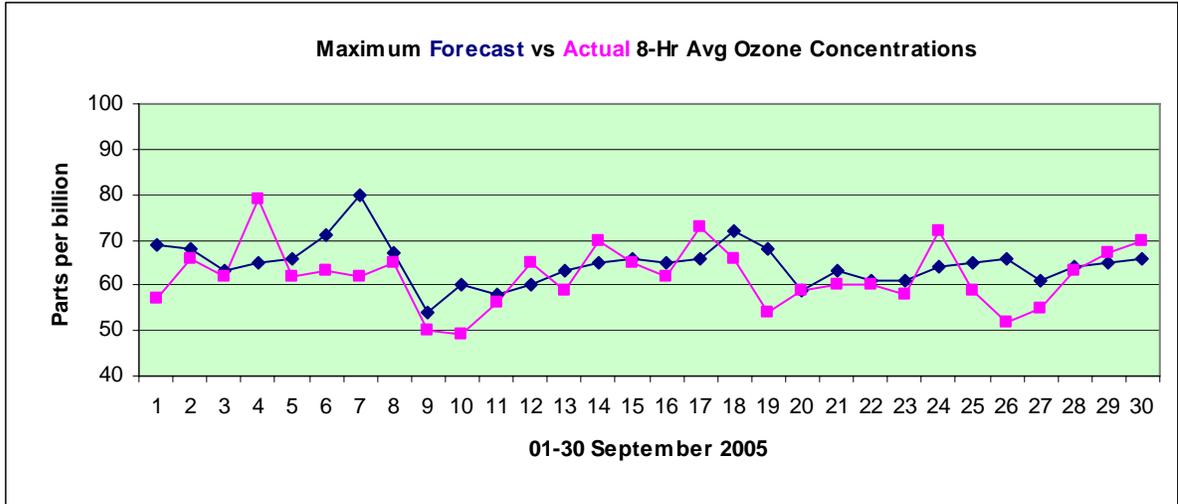
Maximum 8-Hr value: Date Hour Site ppb/AQI DOW
9/04 1100 North Phoenix 79/87 Sun

Maximum 1-Hr value: Date Hour Site ppb/AQI DOW
9/04 1500 North Phoenix 98/82 Sun

Average daily max 8-Hr concentration (ppb): 62.0
Deviation from 1996-2004 average (ppb): -1.5

AUG Climatology: Average number of 8-Hr exceedances: 0.4
(1996-2004) Maximum number of 8-Hr exceedances: 2 in 1997 and 1999
Minimum number of 8-Hr exceedances: 0 in 1996/98, 2000-2004
Average daily max 8-Hr concentration (ppb): 63.5
Record high max 8-Hr concentration (ppb): 91 on the 4th, 1997
Record low max 8-Hr concentration (ppb): 41 on the 24th, 2003

Forecast Verification:	# of days maximum concentrations were over-forecast:	22
	# of days maximum concentrations were under-forecast:	9
	# of days maximum concentrations were correctly forecast:	1
	Sep average forecast accuracy (ppb):	+/-5.6
	Sep average forecast bias (ppb):	+2.6



Narrative: The 2005 Phoenix ozone season ended with a whimper – highest concentrations on the majority of September days were in the good range of the Air Quality Index. The highest reading occurred on the 4th and coincided with an easterly wind regime; the night before a thunderstorm outflow boundary moved over the forecast area from the north. These two factors typically produce the highest ozone levels during the peak ozone months of July and August, and appear to have played a role one last time this season. As the mid-latitude storm track shifted south during the month, it produced winds aloft favorable for the import of ozone and its constituents from California. Sixteen such days have been identified, and during four of those episodes there were noticeable jumps in local ozone concentrations – the 14th, 17th, 24th, and 30th. Of equal interest was the import episodes that occurred at Yuma, a city located in the far southwestern portion of Arizona. There are no exceptional local sources of ozone precursors in Yuma, which makes large ozone level jumps there due to transport especially easy to identify. Such jumps occurred on the 9th, 10th, 14th, 15th, 17th, and 23rd. As a result, on all but the 9th Yuma had higher 1-hr ozone levels than the Phoenix area and, except for the 15th and 17th, had the highest 8-hr ozone readings. On the 10th, 14th, and 23rd Yuma had both the highest 1-hr and 8-hr concentrations. Peak ozone occurred there on the 14th with an 8-hr AQI of 85. NOTE: The ozone portion of these monthly reports will not be produced from October 2005 thru March 2006, however, a summary document that covers the entire 2005 ozone season (April – September) is forthcoming. -Reith