ADEQ Arizona Department of Environmental Quality

Janet Napolitano, Governor
Stephen A. Owens, ADEQ Director

MONTHLY AIR QUALITY REPORT FOR AUG 2005

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 Aug 2005*

*Preliminary data

SAMPLE POLLUTANT REPORTING BOX

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

SUN	MON	TUES	WED	THU	FRI	SAT
	1 64 09 / 41 31	2 66 09 / 59 32	3 85 09 / 25 42	4 106 10 / 41 24	5 85 08 / 41 31	6 54 08 / 30 31
7 85 07 / 36 31	8 51 09 / 22 33	9 49 09 / 29 33	10 42 10 / 26 42	11 48 11 / 36 42	12 45 13 / 45 32	13 43 08 / 22 21
14 37 09 / 23 19	15 54 09 / 30 23	16 56 13 / 46 32	17 54 13 / 57 29	18 47 10 / 51 33	19 43 09 / 51 27	20 49 09 / 33 25
21 61 13 / 37 30	22 64 18 / 64 32	23 45 08 / 41 25	24 72 09 / 35 29	25 77 13 / 54 29	26 47 13 / 60 32	27 49 10 / 44 29
28 77 10 / 44 23	29 82 13 / 65 32	30 64 15 / 68 35	31 64 14 / 61 37			

PM Exceedance days during AUG 2005-

Total= 0	Date	Max AQI	Pollutant	Site/s

PM Health Watches issued during AUG 2005-

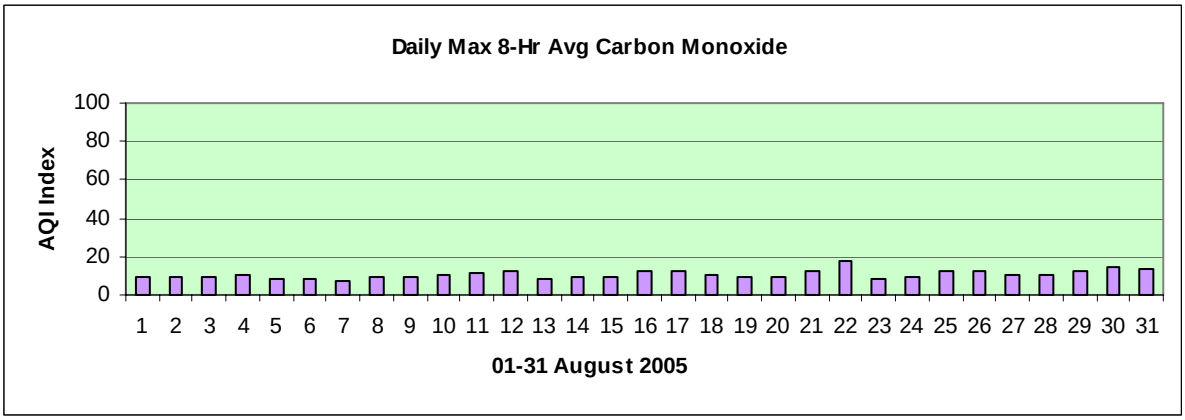
Total= 0	Date	Max AQI	Pollutant	Site/s

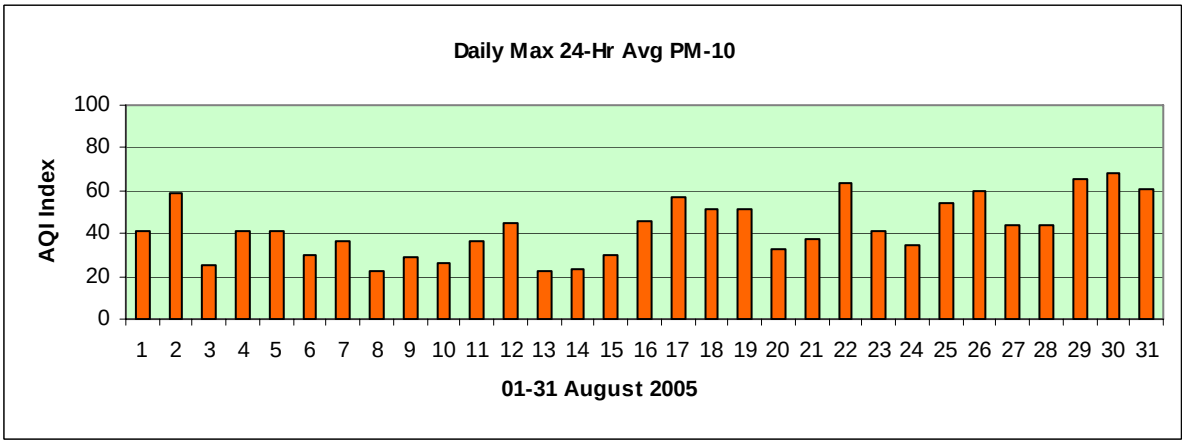
PM High Pollution Advisories issued during AUG 2005-

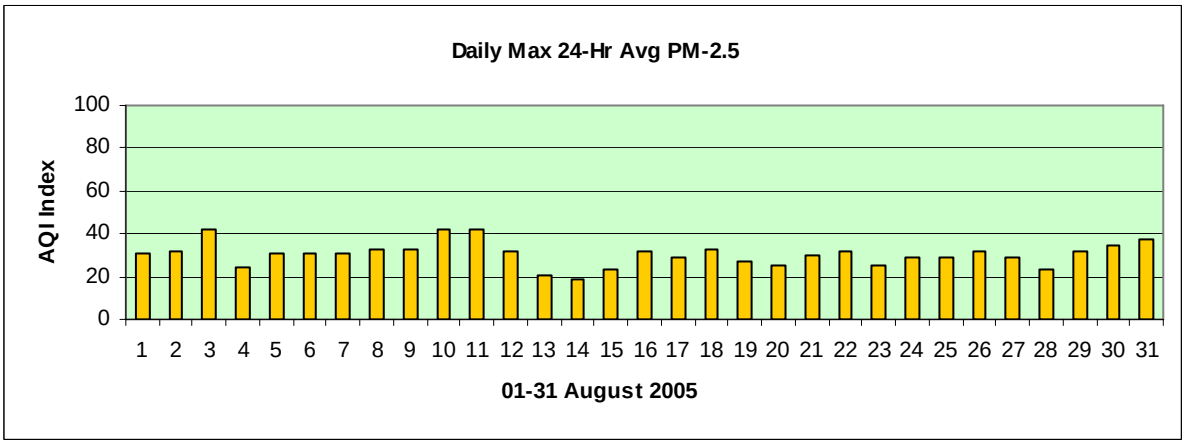
Total= 0	Date	Max AQI	Pollutant	Site/s

Narrative:

August 2005 was a rather benign period for carbon monoxide, fine (PM-2.5), and coarse (PM-10) particle pollutant concentrations; during the month the highest Air Quality Index reading between the three was only 68 on the 30th. Levels of carbon monoxide and PM-2.5 were in the good range of the AQI every day and those of PM-10 only reached the moderate range on ten days. As always, local weather conditions played an important role in the formation of air pollution over the Phoenix metropolitan area. The measure of dispersion (using the knot-feet method) was calculated to be good, very good, or excellent on all but three days of the month. This means that the product of mixing depths and transport wind speeds yielded favorable ventilation. Of more impact, however, was the precipitation that fell over all or portions of the area on the 2nd, 5th, 7th, 8th, 9th, 12th, 14th, 19th, 22nd, and 25th of the month. On most of these dates the rain was the result of summer monsoon thunderstorm outbreaks. The heaviest of these was on the 2nd when up to three inches of rain fell at some metro sites and 1+ inch rainfall totals were commonplace. That soaking, along with the follow-up rainfalls that occurred, kept unpaved surfaces moist and stabilized most of the month. This helped minimize the production of fugitive dust emissions, a major component of local particle pollution. -Reith


Daily Max 8-Hr Avg Carbon Monoxide
AQI Index
100
80
60
40
20
0
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
01-31 August 2005


Daily Max 24-Hr Avg PM-10
AQI Index
100
80
60
40
20
0
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
01-31 August 2005


Daily Max 24-Hr Avg PM-2.5
AQI Index
100
80
60
40
20
0
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
01-31 August 2005

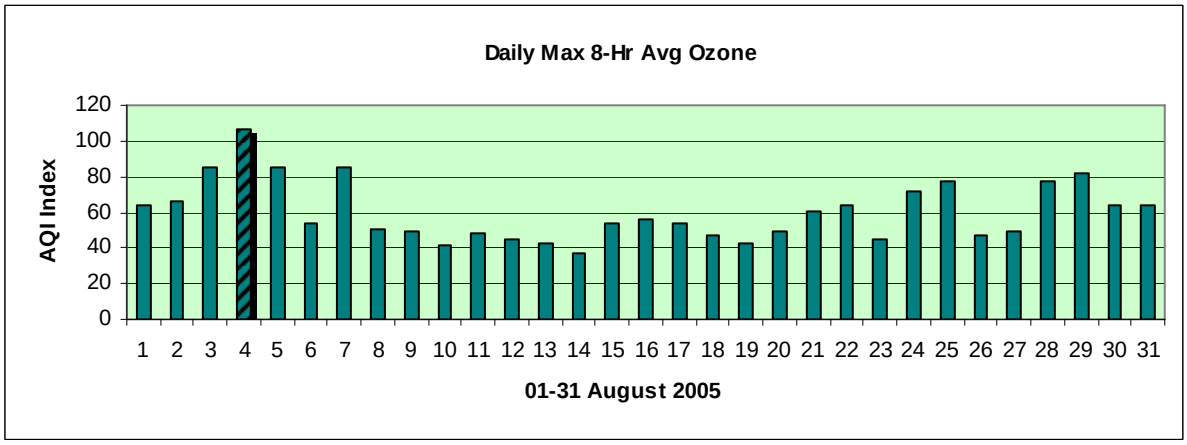
DETAILED OZONE SECTION

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

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

*Preliminary data

SUN		MON		TUES		WED		THU		FRI		SAT	
		1	64	2	66	3	85	4	106	5	85	6	54
7	85	8	51	9	49	10	42	11	48	12	45	13	43
14	37	15	54	16	56	17	54	18	47	19	43	20	49
21	61	22	64	23	45	24	72	25	77	26	47	27	49
28	77	29	82	30	64	31	64						



8-hr Ozone exceedance days in AUG: Total= 1

Date	Max ppb/AQI	Site/s
8/04	87/106	Rio Verde
	86/104	Fountain Hills

Total number of exceedance days since APR 01: 13
Total number of exceedance sites since APR 01: 30

Ozone Health Watches in AUG: Total= 2
(Forecast max value 80-84 ppb)

Date	Max ppb/AQI	Site/s
8/05	78/85	Glendale
8/06	66/54	Buckeye

Ozone Health Watches since APR 01: Total= 24

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

High Pollution Advisories since APR 01: Total= 9

Concentration Recap:

Days in the Good AQI category:	12
Days in the Moderate AQI category:	18
Days in the Unhealthy for Sensitive Groups AQI category:	1
Days in the Unhealthy AQI category:	0
Total Forecast Days:	31

Maximum 8-Hr value:	Date	Hour	Site	ppb/AQI	DOW
	8/04	1200	Rio Verde	87/106	Thu

Maximum 1-Hr value:	Date	Hour	Site	ppb/AQI	DOW
	8/04	1500	Fountain Hills	106/88	Thu

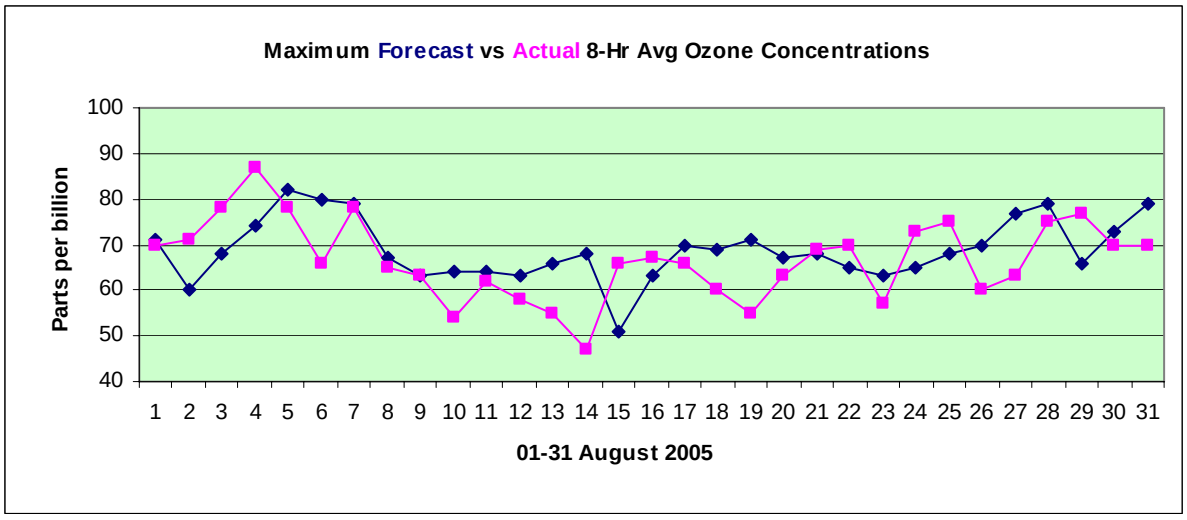
Average daily max 8-Hr concentration (ppb):	66.7
Deviation from1996-2004 average (ppb):	-6.4

AUG Climatology:
(1996-2004)

Average number of 8-Hr exceedances:	4.4
Maximum number of 8-Hr exceedances:	10 in 1998 and 2000
Minimum number of 8-Hr exceedances:	0 in 1997, 2002, 2004
Average daily max 8-Hr concentration (ppb):	73.1
Record high max 8-Hr concentration (ppb):	100 on the 10th, 2001
Record low max 8-Hr concentration (ppb):	46 on the 12th, 1997

Forecast Verification:

# of days maximum concentrations were over-forecast:	20
# of days maximum concentrations were under-forecast:	10
# of days maximum concentrations were correctly forecast:	1
Aug average forecast accuracy (ppb):	+/-7.5
Aug average forecast bias (ppb):	+2.1



Narrative:

Local 8-hr ozone concentrations dropped dramatically during August 2005 from the month prior, and the average of the daily maximum concentration – 66.7 parts per billion (ppb) – was the third lowest August average during the 1996-2005 period of record and over six ppb below the preceding nine-year August average. On 12 days the highest ozone level was in the good range of the Air Quality Index, surpassed only by the 18 days in August 2004. The only two site exceedances that did occur – on the 4th – were just barely over the standard. Subtle changes in the typical summer monsoon synoptic pattern, along with local weather events, are believed to have played a major role in the abnormally low ozone production most of the month. The highest ozone levels of the summer usually coincide with a deep easterly wind regime that accompanies the summer monsoon. Its most familiar signature is the presence of the 500mb ridge axis north of Arizona and/or the 500mb high height center over or near the Four Corners region. This configuration was hard to come by during August 2005 with the high center positioned at times to the west and east of the state. The mid-latitude storm track was also active during the month and either displaced the 500mb high or resulted in westerly winds aloft, especially the last ten days or so. Local influences also appeared to play in role in curtailing ozone production and these included persistent afternoon cloud cover, maximum afternoon temperatures only in the nineties, and prevailing breezy to gusty winds, mainly with a southerly through westerly component. As mentioned earlier, the storm track westerlies were present from the 22nd thru the 31st, along with occasional flow aloft conducive to the import of ozone and its precursors from that direction. A prime example of this occurred from the 26th thru the 28th. As the table below illustrates, an eastward moving "ozone gradient" appeared to impact west and then central Arizona during that period (highest 8-hr ozone concentration listed in ppb):

Site	Date	August 26	August 27	August 28
Yuma		44	69	58
Alamo Lake		35	50	52
Phoenix Metro Area		60	63	75

-Reith