



**MONTHLY AIR QUALITY REPORT FOR
AUGUST 2009**

AOI 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 August 2009*

*Preliminary data

SAMPLE POLLUTANT REPORTING BOX

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

SUN			MON			TUES			WED			THU			FRI			SAT		
																		1	74	09
																			34	28
2	64	08	3	64	08	4	101	06	5	84	06	6	48	06	7	43	06	8	58	10
	31	28		47	35		59	36		79	48		57	28		43	22		40	29
9	64	17	10	80	10	11	48	08	12	51	10	13	54	08	14	54	06	15	41	06
	37	31		51	37		64	35		94	59		40	39		24	31		23	27
16	61	09	17	80	13	18	58	13	19	61	05	20	61	06	21	71	07	22	50	06
	26	27		40	33		51	37		43	33		45	31		92	41		28	29
23	54	07	24	50	07	25	49	08	26	64	08	27	71	09	28	80	10	29	54	13
	18	20		29	22		37	27		30	29		42	31		47	40		40	38
30	61	06	31	67	07															
	44	35		90	52															

Calendar of High Pollution Advisories and Health Watches issued during August 2009

SUN			MON			TUE			WED			THU			FRI			SAT					
																		1					F
2		F	3		F	4			5			6		F	7			8					
9			10			11			12			13			14			15					
16			17			18			19			20			21			22					
23			24			25			26			27			28			29		F			
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 August 2009

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

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 AUG 2009-

Total= 0 Date Max AQI Pollutant Site/s

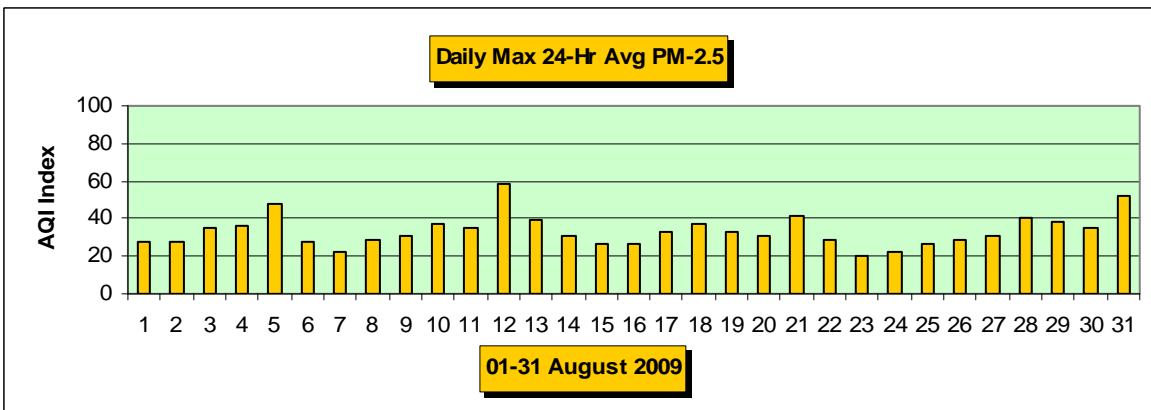
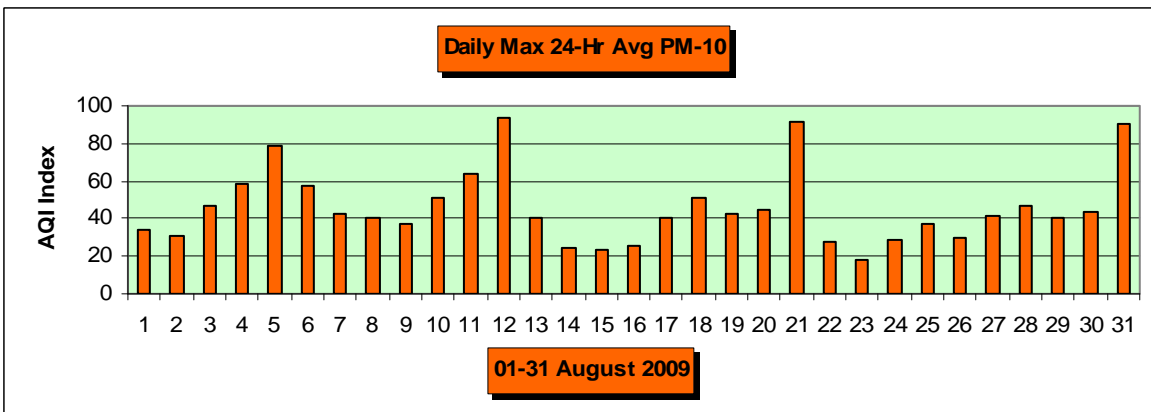
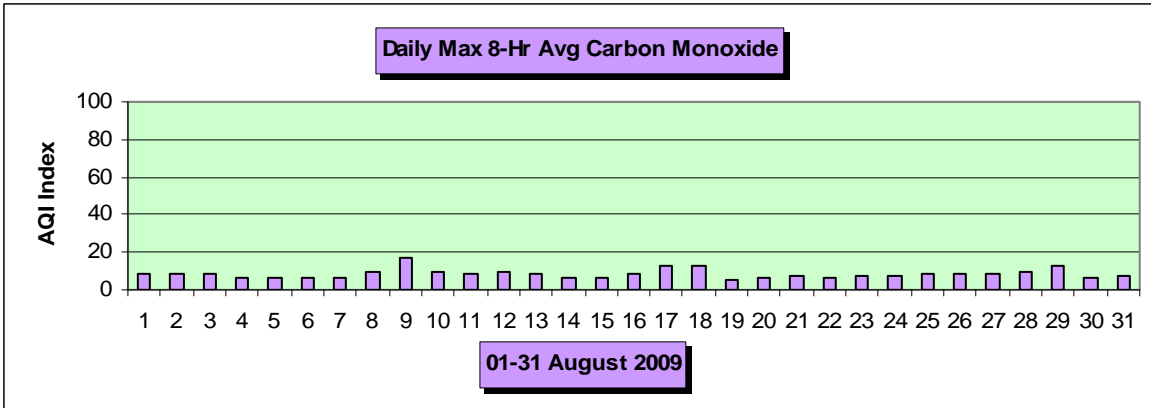
Non-Ozone Health Watches issued during AUG 2009-

Total= 0 Date Max AQI Pollutant Site/s

Non-Ozone High Pollution Advisories issued during AUG 2009-

Total= 0 Date Max AQI Pollutant Site/s

Concentration Recap: Days in the **Good** category: 4
Days in the **Moderate** category: 26
Days in the **Unhealthy for Sensitive Groups** category: 1
Days in the **Unhealthy** category: 0
Days in the **Very Unhealthy** category: 0
Days in the **Hazardous** Category: 0
Total Forecast Days: 31



Narrative: From an air pollution point of view, the month of August was comparatively uneventful in the Phoenix metro area. With the normally conspicuous summer monsoon circulation pattern anomalously absent during much of the month, blowing dust due to thunderstorm outflow boundaries only occurred on six days. Only half of these episodes produced sufficient quantities of PM-10 (coarse particles) to threaten the EPA standard, with AQI levels at or above 90 AQI on the 12th, 21st, and 31st. The following three figures captured on the 31st will help to illustrate how such blowing dust events tend to evolve in the Valley.

Figure 1 is a short term forecast issued at 6:33 p.m. by the National Weather Service in Phoenix to indicate that a thunderstorm outflow boundary has been detected. Figure 2 is a 7:32 p.m. Doppler radar depiction of strong echoes – depicted by the red and orange colors – associated with the line of thunderstorm cells responsible for producing the outflow boundary. Figure 3 is an 8:30 p.m. photograph from the local VISNET array showing blowing dust over a portion of downtown Phoenix.

FIGURE 1

Short Term Forecast

SHORT TERM FORECAST
NATIONAL WEATHER SERVICE PHOENIX AZ
633 PM MST MON AUG 31 2009

AZZ023-010300-
GREATER PHOENIX AREA-
INCLUDING THE CITIES OF...BUCKEYE...CAREFREE...CAVE CREEK...
CHANDLER...FOUNTAIN HILLS...GILBERT...GLENDALE...MESA...PEORIA...
PHOENIX...SCOTTSDALE...SUN CITY...AND TEMPE
633 PM MST MON AUG 31 2009

.NOW...
A STRONG OUTFLOW BOUNDARY WILL MOVE IN FROM THE SOUTH AND WILL AFFECT
THE GREATER PHOENIX AREA THIS EVENING. GUSTY WINDS UP TO 35 MPH AND
AREAS OF BLOWING DUST WILL ACCOMPANY THIS OUTFLOW BOUNDARY. SOME
LOCATIONS THAT MAY BE AFFECTED INCLUDE CHANDLER...QUEEN CREEK...
GILBERT...AHWATUKEE...AVONDALE...AND LAVEEN. IN ADDITION...A SLIGHT
CHANCE EXISTS FOR THE DEVELOPMENT OF ISOLATED THUNDERSTORMS THIS
EVENING.

\$\$
JR

NATIONAL WEATHER SERVICE PHOENIX IS ON THE INTERNET AT
WEATHER.GOV/PHOENIX

FIGURE 2

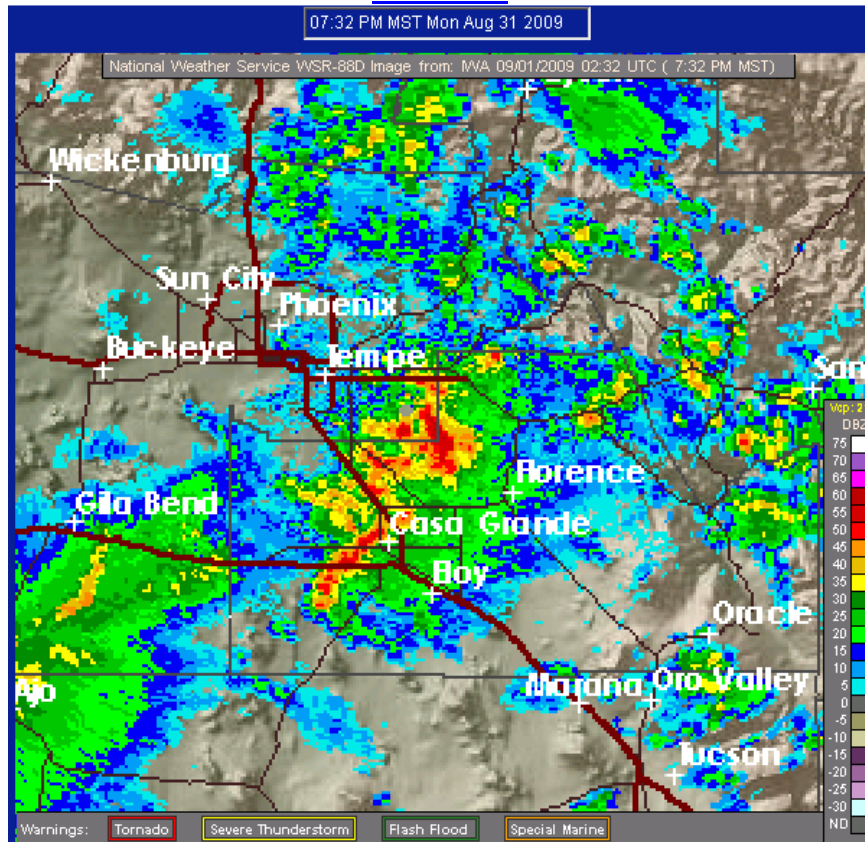


FIGURE 3

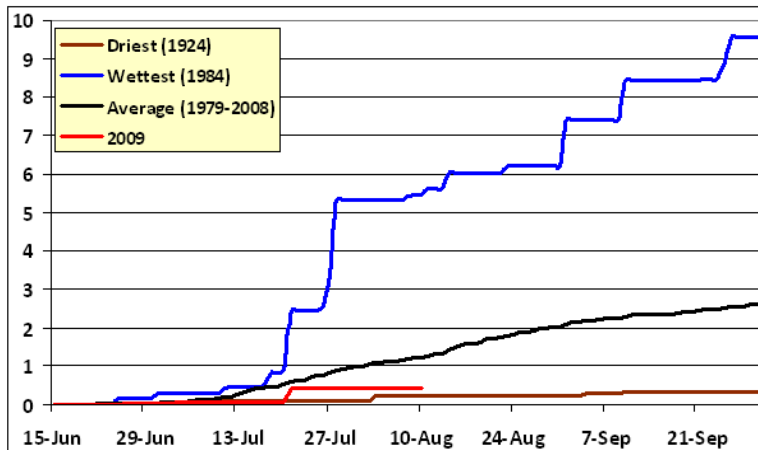


The minimal summer monsoon thunderstorm activity not only contributed to lower than average PM-10 readings, but as the statement and graph below from the NWS illustrates, it also resulted in a significant seasonal rainfall deficit. The final graphic from NCDC also displays this circumstance to good effect. -Reith

Monsoon Season 2009 Rainfall Still Lacking
 Updated: 4:30 PM August 16, 2009

Through August 15th, only 0.70" of rain has fallen at Phoenix Sky Harbor Airport this monsoon season. The new Phoenix Rainfall Index (PRI) has measured 0.33" so far this monsoon season. The table below shows the PRI since 1999 for June 15th through August 15th and how it compares to observed rainfall at Phoenix Sky Harbor.

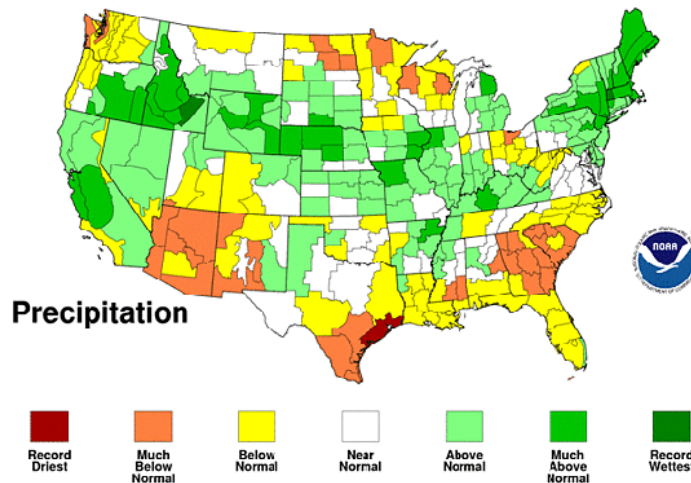
During the past 30 years (1979-2008), the average precipitation during that same period, June 15th through August 15th, was 1.51". The wettest monsoon season through August 15th was in 1911 when 6.59" was measured while the driest was in 1991 when 0.10" of rain fell (see Top 10 tables below). The chart toward the bottom shows how, at Sky Harbor, 2009 compares to average and the wettest/driest year on record. From all of these datasets, we can easily see that the monsoon season of 2009 remains slow to get going.



Cumulative precipitation during the monsoon season for: including the wettest year on record (blue, 1984), driest year on record (brown, 1924), the 1979-2008 average (black), and so far in 2009 (red). Vertical axis is inches, horizontal axis is day during the monsoon season (June 15 - September 30).

Jun - Aug 2009

National Climatic Data Center/NESDIS/NOAA



DETAILED OZONE SECTION

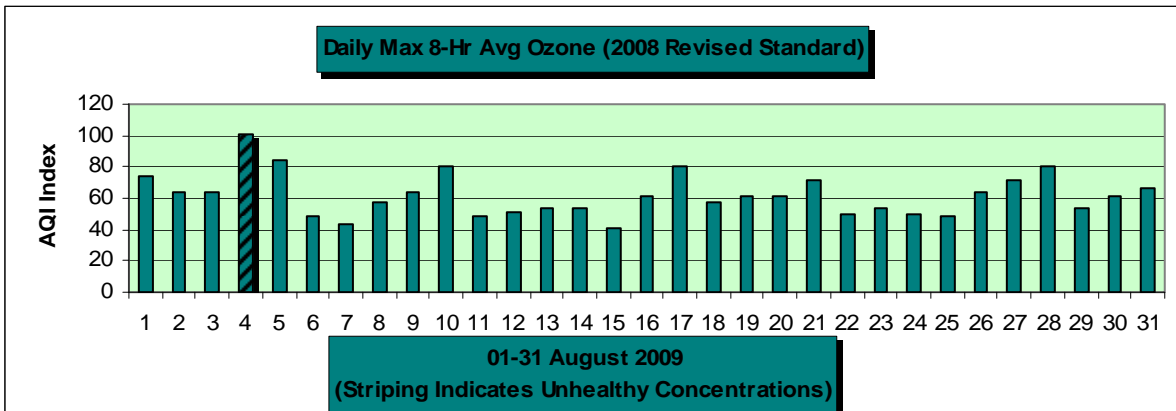
(Based on the 2008 EPA Revised 8-Hour Ozone Standard)

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

SUMMARY OF MAXIMUM 8-HR OZONE AQI VALUES FOR AUGUST 2009*

*Preliminary data

SUN		MON		TUES		WED		THU		FRI		SAT	
												1	74
2	64	3	64	4	101	5	84	6	48	7	43	8	58
9	64	10	80	11	48	12	51	13	54	14	54	15	41
16	61	17	80	18	58	19	61	20	61	21	71	22	50
23	54	24	50	25	49	26	64	27	71	28	80	29	54
30	61	31	67										



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

Date	Max ppb/AQI	Site/s
8/04	76/101	Queen Valley

Total number of exceedance days since APR 01: 5
Total number of exceedance sites since APR 01: 11

Ozone Health Watches in AUG: Total= 5
 (Forecast max value 72-75 ppb)

Date	Max ppb/AQI	Site/s
8/01	67/74	South Scottsdale
8/02	64/64	South Scottsdale
8/03	64/64	Pinnacle Peak
	64/64	South Scottsdale
8/05	70/84	Tonto Nat'l Mon
8/28	69/80	Dysart

Ozone Health Watches since APR 01: Total= 29

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

High Pollution Advisories since APR 01: Total= 6

Concentration Recap:

Days in the Good category:	7
Days in the Moderate category:	23
Days in the Unhealthy for Sensitive Groups category:	1
Days in the Unhealthy category:	0
Total Forecast Days:	31

Maximum 8-Hr value:	Date	Hour	Site	ppb/AQI	DOW
	8/04	1200	Queen Valley	76/101	Tue

Maximum 1-Hr value:	Date	Hour	Site	ppb/AQI	DOW
	8/01	1400	South Scottsdale	91/76	Sat

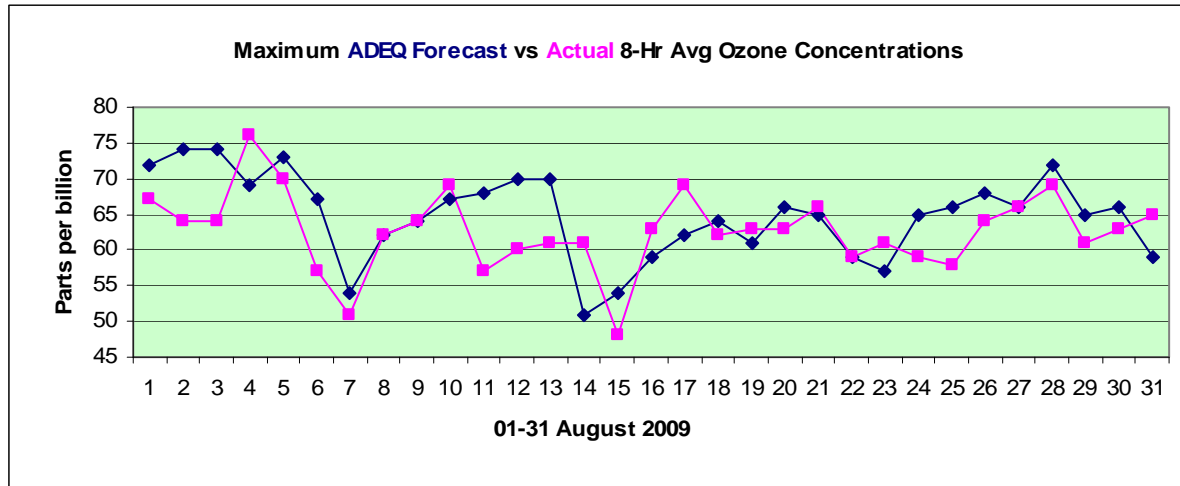
Average daily max 8-Hr concentration (ppb): 62.6

Deviation from the 1996-2008 average (ppb): -8.7

AUG Climatology:
 (Period 1996-2008 using 1997 85ppb standard & 2008 using 76ppb standard)

Average number of 8-Hr exceedance days:	3.5
Maximum number of 8-Hr exceedance days:	10 in 1998, 2000
Minimum number of 8-Hr exceedance days:	0 in 1997, 2002, 04, 07
Average daily max 8-Hr concentration (ppb):	71.3
Record high max 8-Hr concentration (ppb):	100 on the 10th, 2001
Record low max 8-Hr concentration (ppb):	41 on the 6th, 2007

Forecast Verification:	# of days maximum concentrations were over-forecast:	18
	# of days maximum concentrations were under-forecast:	9
	# of days maximum concentrations were correctly forecast:	4
	Aug average forecast accuracy (ppb):	+/-4.9
	Aug average forecast bias (ppb):	+3.5



Narrative: As already mentioned in this report, the typical summer monsoon circulation pattern of moist east to southeasterly flow– that normally is well-ensconced during the month of August – was practically non-existent this year. In its place was a series of upper level troughs in the mid-latitude storm track that either passed overhead or became quasi-stationary nearby. This situation produced many days of dry westerly flow that tended to keep surface moisture levels well below average, and that contributed to several periods of record daytime heat (24 hour-average dew point temperatures at Sky Harbor Airport were in the 20’s, 30’s and 40’s on 17 days during the month; they were 60 degrees or above on only two days). This flow pattern also contributed to unusually low local ozone levels. The ozone accumulation quotient that regularly peaks during summer easterly wind regimes – that accompany a well-established monsoon flow – never developed. The closest semblance to this scenario occurred on the 28th when the sub-tropical high aloft became established over Las Vegas. Winds in the 5-10K’ level over Phoenix were light easterly that day and highest ozone levels occurred at the Dysart monitor, located in the far northwest Valley. -Reith